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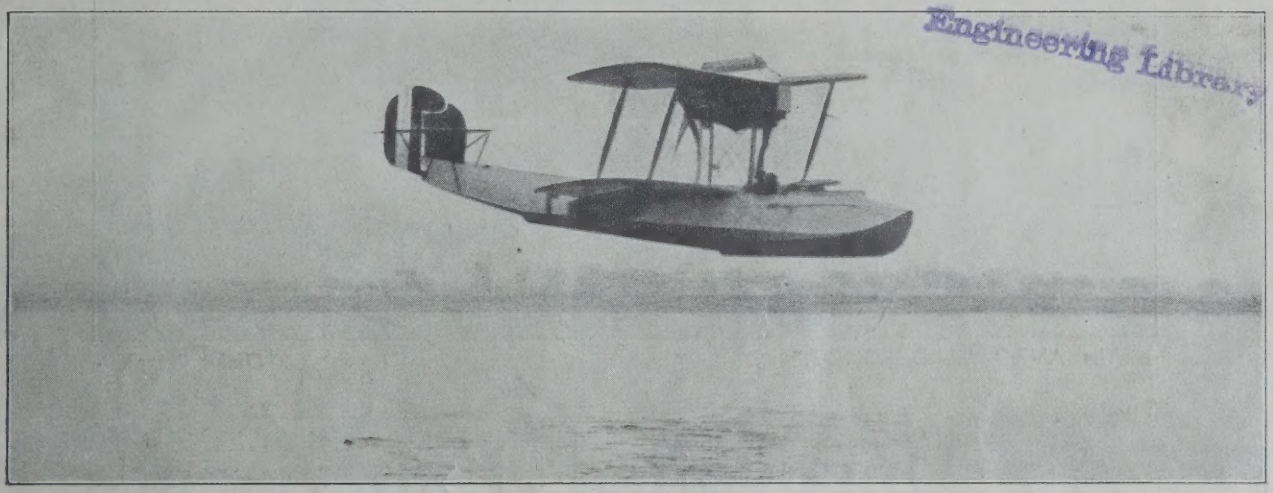
THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXVIII. No. 1. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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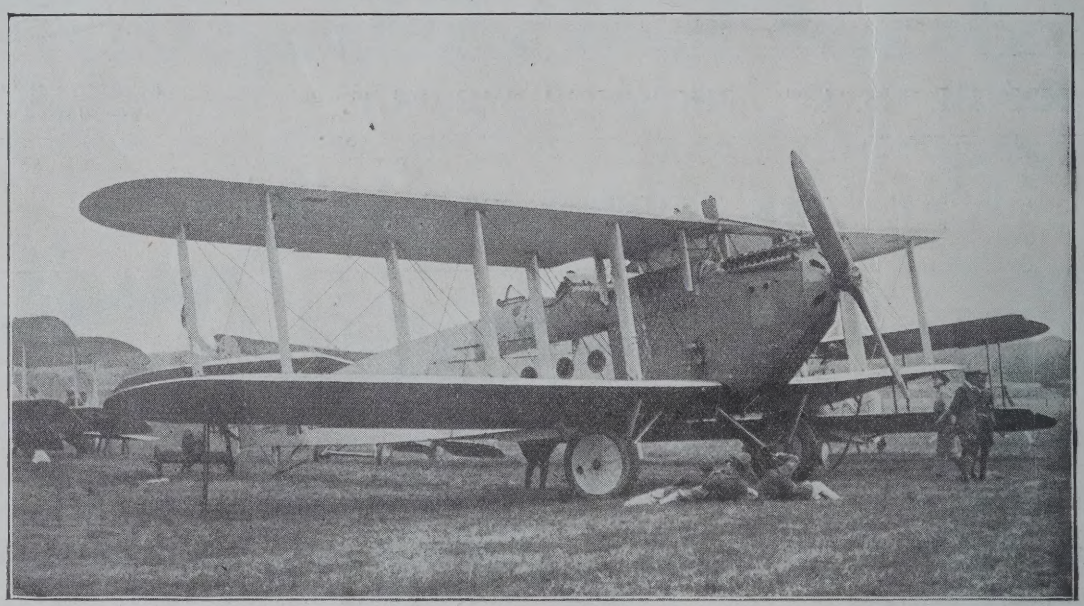
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ON THE OUTLOOK.

This being the first appearance of THE AEROPLANE in the Year of Grace 1925, it is meet and proper to consider the outlook for the near future.

In the last issue of this paper there appeared a general review of what has happened during the past year in the progress of aeronautical history. To-day we will discuss the probabilities and possibilities not only of aeronautics but of History in general, for in these days when the Royal Air Force is recognised as our first Line of Defence and the air Services of all nations are recognised as the spear-heads of their striking forces the aeronautical history of a nation may safely be regarded as leading the rest of that nation's history.

Those of us who have made a precarious living out of aviation since the end of the false war boom in 1919 must have noticed how much more important aeronautical affairs have become during the past year.

Whereas a year or two or three years ago the daily news-sheets and weekly papers and monthly magazines paid no attention to flying except when the daily papers reported air debates in Parliament or published alleged scandals in the Air Force or made attacks on the Air Ministry, or gave scare headlines to air accidents, to-day one can scarcely open a paper without finding an article or a report on some phase or other of aeronautics. And these articles are in the main well-informed and genuinely useful to the progress of aeronautics.

Two or three years ago almost everything that appeared in the daily papers about aviation was sheer nonsense. To-day almost every paper has on its staff at least one man who has a sound working knowledge of aircraft and of what pertains thereto. And that man's job is to see that aeronautical news is reliable and that aeronautical articles are technically correct.

Among the general public the spread of knowledge of flying is equally remarkable. At an ordinary dinner party composed of intelligent people air transport can now be discussed as a practical proposition, and as a subject for conversation the air Services of the various nations are perhaps of rather more interest than are the Armies and Navies of the World. And the man-in-the-train is equally willing to talk about flying in one form or other.

The fact is that we are on the verge of a great awakening of the human mind to the importance of aeronautics to the progress of the human race.

To that extent the outlook for those immediately concerned with the air is not merely hopeful and encouraging, it is such that we may be certain that within the next few years aircraft and the use of aircraft will become factors in the making of History as important as the building and use of steamships, railways and automobiles have been in the past.

POSSIBILITIES.

If by chance the World were to be blessed with a period of Peace and goodwill among men for the next ten years we should undoubtedly see within that period the organisation of airlines all over the Earth. We should have high-speed aeroplane lines running by day over stages of 250 miles or so and we should have slower airship lines running by day and night over stages of 1,000 to 2,000 miles without a stop. Probably by the end of the ten years we should have aeroplane lines running by night also, over properly prepared routes with adequate arrangements for landing, lighting, direction, and signalling.

In that ten years we should have a company-promoting boom similar to that which followed the introduction of railways and pneumatic tyres and automobiles and the general use of rubber, and so forth. Vast fortunes would be made from nothing and would be lost again in the ensuing slump. And afterwards air transport would settle down to be an ordinary every-day method of conveyance.

But such a happy peaceful line of development is not likely to be the fate of Aviation, whose history has been from its birth a record of battle, murder and sudden death. It began with the international battle for the Conquest of the Air, and the deaths of many gallant pioneers. It progressed through the deaths of equally gallant flying men in the Services of many countries who were murdered by the stupidity and interference of people in official positions who were responsible for the supply and design of the machines they had to fly. It continued through the deaths of those who were killed while flying during the War 1914-18. British, French, German, Austrian, American, Italian, and all, they were equally martyrs to the cause of flying. They chose flying as their duty in the War. They died doing their duty. And their deaths have added to the World's store of aeronautical knowledge.

PROBABILITIES.

The outlook for the near future is not Peace but War. In all directions war threatens. And it is as weapons of war and not as implements of peace that aircraft will progress through their next stage of development.

People are already beginning to forget the brief though intense war of 1914-18. War-sickness is passing. A new generation is arising which only remembers the war as something of which they heard as children. Graduates of our Universities were leaving their Preparatory Schools when the Armistice was signed in 1918. The younger officers of the R.A.F. also were school-boys, one might even call them children, while the War was at its most critical point. Mothers of families to-day were little girls in those days. To them War is a glorious thing, in which honour and rewards may be won.

War books which would have been unsaleable three or four years ago now find a ready market. War stories again find place in our popular magazines. War plays attract once more. War is, in fact, regaining the glamour which has surrounded it in time of peace in all ages.

Even those who served in the War are forgetting its horrors and are recalling its splendours of adventure and self-sacrifice, for it is one of the merciful dispensations of Providence that the human mind easily forgets pain and remembers best those things which are pleasant or joyous or inspiring. We recall the great moments of our lives and our perfect days long after we have forgotten our miseries. Not even the giver of those perfect days can take away the memory of them.

If it were not so the Human Race would cease to exist. And all the Force of Nature works for the progress of the Race, on the principles of the famous couplet :—

"So careful of the type it seems
So careless of the single life."

THE BENEFITS OF WAR.

Many great philosophers and scientists have shown that war is a biological necessity. And those of more poetic mind have sung how it is the furnace which refines the gold of a man or a people or a race.

We of this British Empire have passed once more through that furnace and it has burned away much of the dross of self-satisfaction and self-complacency and selfishness which clogged our existence during those deadly dull years of commercial success which preceded the outbreak of war in 1914. The nerve-strained chaotic years which followed the Armistice in 1918 were our period of cooling-off after emerging from the fire. And now one finds less selfishness and more consideration for others, a more altruistic spirit than existed before the war 1914-18.

Schemes for the betterment of the people are more common than they were and the people themselves are the better for them. The national soul and the individual soul have much in common, and the present state of our national soul may be expressed in the words of one who, having suffered much and having found happiness, has written :—"Being selfish I tried to be unselfish, and being impatient I tried to be patient, and being critical I would not judge, and being jealous I tried to forgive and think no evil. Selfishness is the one and only sin that is almost unforgiveable : the thing that for more than any other crime brings unhappiness and evil consequences."

That is rather a fine philosophy of life, and it is very largely the natural outlook of the English People to-day. Of course we have our profiteers and our other criminals, from

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cut-throats to cat-burglars, but the heart of the Nation is sound, and the best people are honestly doing their best to give happiness to those who are less fortunate than themselves.

To-day we still hear of strikes and unemployment and social unrest and so forth. But the fact remains that our people are better fed and better clothed and better housed than ever they were before the War. They work shorter hours, they have more time for amusement and they have better forms of amusement—even the Americanised kinema and the frivolous revue and the glittering dance-palace are improvements on the old beer-swilling music-hall and the reeking pub of twenty-five years ago.

British credit in the World's financial centres stands higher than ever it did. Our strikes are no more numerous or important in proportion to the work done than they were before the war. The proportion of unemployed is no greater than it was in any period of moderately bad trade before the war. And the social unrest is only an indication of a groping after higher and better living, very much as in the individual spiritual unrest is the sign of a struggle for a higher mode of life.

But over and above all that, and perhaps because of it, there is among our people of all classes that kindlier spirit, that greater pleasure in helping one another, and that cheerful willingness to make the best of a pretty good old World, which certainly was not so evident before the War. There is in fact very clear evidence to those who have eyes to see that as a people the British Empire has been more closely knit together by war.

The Blood-Brotherhood.

There is however a still greater influence which has been brought into our existence as the result of the war. That is our closer understanding with our blood-relations on the other side of the Atlantic.

The understanding began when Americans came over here to help us soon after war broke out in 1914. Some came purely on business to sell us armament in hope of profit. But even among them very many were impelled by a heartfelt desire to help their Mother Country. Others, to be numbered in thousands, joined the Fighting Services, mostly in the Army and the Flying Services. Few joined the Navy but in the Royal Naval Air Service there were many American citizens who posed as Canadians and there were still more Americans in the Royal Flying Corps.

During one's recent visit to the States one was constantly meeting American aviators who had fought in the R.F.C.—they generally described themselves as near-Canadians, much as they call their favourite Budweiser beverage "near-beer." They are the best of fellows and one's only regret is that they are not in the R.A.F. to-day. But they are doing splendid work where they are, for they are each and all making firmer the understanding between the United States and this Empire. They are none the less loyal Americans for their pride that they have served the King in one of his Royal corps. And that pride makes them all the more valuable as instruments in bringing about the Great Alliance between the United States and the British Empire which must come sooner or later.

The English-Speaking Alliance.

In the American Flying Services there is an open and convinced feeling that there must be an alliance between our two nations. The feeling exists in the U.S. Army and Navy, but perhaps not so generally as in the Flying Services, for the problems of aviation bring the flying people of the two nations rather more closely in touch than those of sea and land war bring the Army and Navy people together.

Among the people who really make things move in the U.S. Army and Navy Air Services one found that almost all regarded an alliance as essential and natural for Great Britain and America. Some officers called it an Anglo-Saxon Alliance. Some said that the English-speaking peoples must boss the Earth. Some, who had more knowledge of ethnology, spoke of a Nordic Alliance, to include the Dutch, Scandinavians, Northern French, Belgians, Northern Italians, and the true Germans, as distinct from the square-head Prussians.

It was clear that all mean the same thing, that is an alliance of the White Race against the Yellow. And they all seem to limit their calculations to the main Nordic stock. They regard the Mediterraneans, that is to say the Southern French and the Southern Italians and Dagoes generally, as not being worth counting. They are prepared to make them do the dirty work but they are not going to trust them in the fighting line. They have no use, except as coolies, for Arabs or Africans or Indians (naturally they cannot be expected to know that the Pathan or Punjabi is not an Indian and that the Berber is not an Arab but are as good white men as any of the rest of us) or coloured folk of any kind.

As the enemies of that Alliance they class all the Yellow peoples—Russians, East Prussians, Turks, Tartars of all kinds, and the Japanese. They regard the Chinese as being the great source of supply of coolies for the Japanese and Russian Armies and Air Forces on land but they do not regard the Chinaman as fighting material—in which belief they are right.

The U.S. Services regard war with Japan as a certainty and they believe it will begin in the course of the next few years, possibly two or three years hence, but certainly not more than five. They are preparing for it as thoroughly as they can with the small amount of money which they can extract from Congress. And they are being backed by the most powerful newspaper influence in America, the Hearst Press.

Newspaper Influence.

The Hearst group consists of some 700 papers which between them have about 17,000,000 (seventeen million) readers per day. The head of the group is William Randolph Hearst, who for years has been anti-English, chiefly, so far as one can gather because when he visited England a long time ago some tactless persons in high places were rude to him.

The Vice-President of the group is Bradford Merrill, a kindly courteous gentleman who happens to possess as fine a brain as ever concerned itself with newspapers and their influence on World Politics. With him is associated Arthur Brisbane, a man with a vitriolic pen and a keen mind, who day by day in all those 700 syndicated papers preaches in his own column to the 17,000,000 readers.

Of late the Hearst Press has ceased to be anti-British and has become anti-Japanese. Hardly a day passes in which Arthur Brisbane does not warn America against the Japanese Peril and preach preparation against Japan. The influence of such determined antagonism is necessarily immense. One felt its effect as soon as one began to talk international politics to Americans. The result of it is that anti-Japanese feeling in the States to-day is, if anything, stronger than was anti-German feeling in France before 1914. And this feeling is based on personal knowledge.

When the Hearst Press was anti-English nobody worried much, because the Nordic Americans knew that there was no English Peril to fear. England and the States had too much in common and were too closely knit by business ties to go to war. And England did not covet any American possessions.

The Race Question.

The English American is the real power in the United States. Nobody else counts for much. If one looks back at American history one sees that the English have dominated that history. All the Presidents have been English except for a couple of North Irishmen and one Dutchman. The Jews run much of the commercial finance, the Scots run much of the big business. The Irish (of the Nordic but not the Mediterranean type) run the police and the lower politics. The dirty work is done by "the Portuguese, the Armenians and the Greeks" (as Miss Norah Bayes sings) and assorted Dagoes, Wops, Bohnuks, Wogs, Niggers and so forth. But the backbone of the American Nation is Nordic and the spinal chord is English.

The Americans know it. Every American who can trace English or Scottish or North Irish or Dutch or Frankish or Scandinavian ancestry is proud of it. And the proudest of all are those of straight English descent. Consequently there is not and never can be any real animosity between the English and the Americans. There is in fact no such thing as an American. There are only Europeans of assorted tribes who happen to have been born in America.

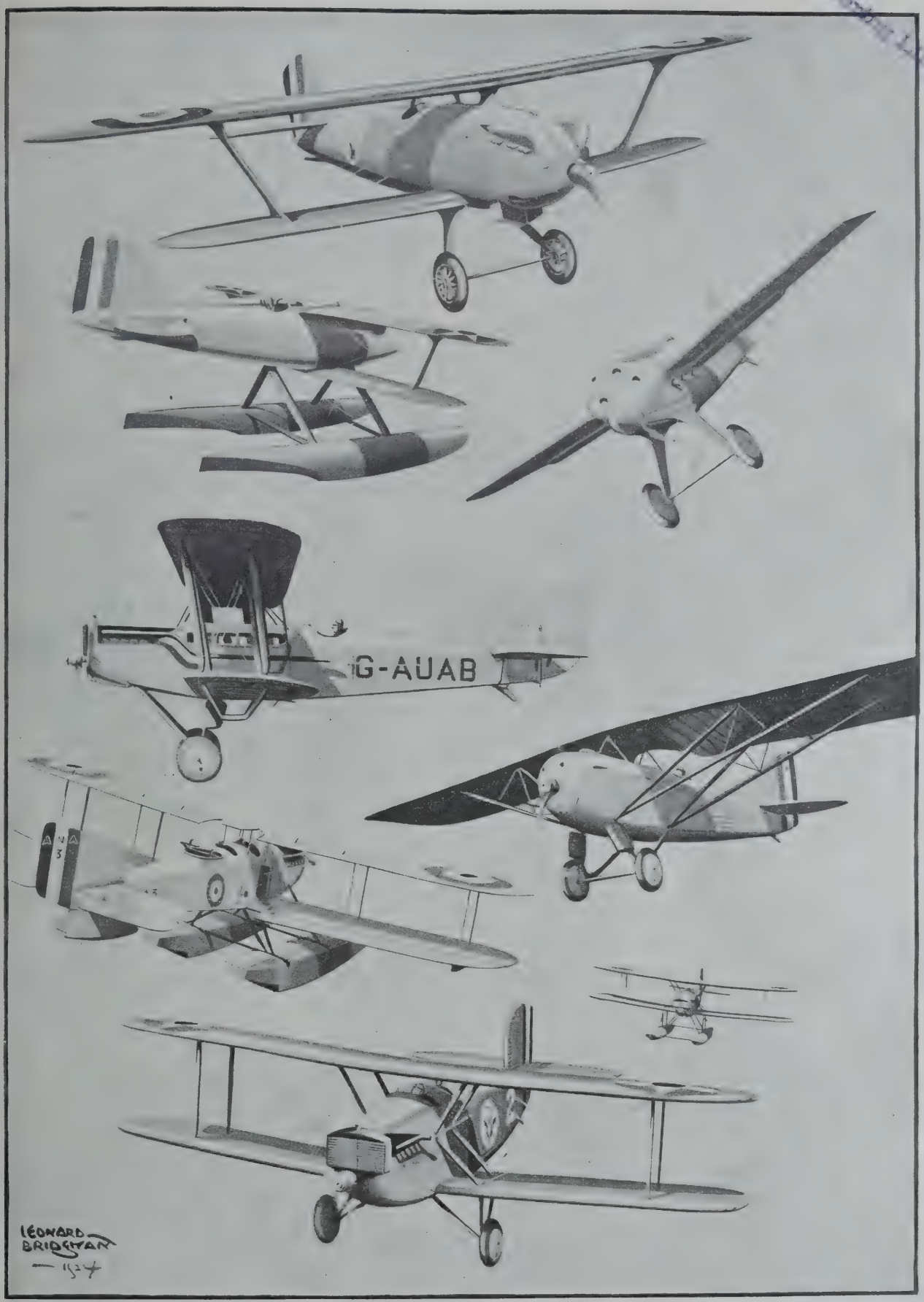
But Japan is another affair. There are three millions of Japanese residing on the Pacific Slope and Japan is constantly arguing that more should be allowed to enter the States. There are more millions of Japanese in Mexico, just over the border. Japan openly covets the Philippines and Hawaii, which are American possessions. Japan owns (under mandate from the Versailles Treaty) most of the Pacific Islands which cover the route of American shipping to the Philippines and Hawaii and the Malay Archipelago. Japan is endeavouring to get a stranglehold on China so as to exploit Chinese trade and exclude American and European business. Japan has captured Korea and has established army, navy and air bases there.

In fact Japan is openly and unashamedly manœuvring to make the Pacific Ocean a Yellow Lake. And America is not going to stand for it.

The Makings of a War.

There you have all the makings of a war. The precise act which will cause it to begin does not matter. It may be the murder of a Japanese in San Francisco. It may be an insult to an American woman in Japan. Any trivial act will be sufficient excuse. War comes from general irritation and tension between nations, not from any good reason.

Incidentally anti-American feeling in Japan is as strong as is anti-Japanese feeling in America. An intelligent, much-travelled and well-dressed Englishwoman told one not long ago of her own experiences in Japan. At a big hotel in Tokyo the waiter flung the plates and other implements onto the table in an uncivil, almost insulting, way, till she told him that if one of her servants behaved like that in England he



SOME RECORD BREAKERS.—Above are shown seven representative types of aircraft, each of which during 1924 accomplished some particularly noteworthy performance. At the top is the Bréguet XIX (400 h.p. Lorraine-Diétrich engine) on which Lieut. Pelletier Doisy flew from Paris to Shanghai between April 24—May 20. It will be remembered that he flew from Paris to Calcutta in 51½ hours flying time. Below on the left is the Curtiss R.2C.1 seaplane on which Lieut. Rittenhouse, U.S.N., made an average speed of 227 m.p.h. over the observed course on Long Island Sound on Sept. 27. On the right is the Bernard Ferbois racer (450 h.p. Hispano-Suiza engnie) on which Adjt. Bonnet put up the World's Speed Record to 278 m.p.h. on Dec. 11. Below the Curtiss is the D.H.50 (240 h.p. Siddeley Puma engine) on which Lieut.-Col. Brinsmead, Capt. Jones, and Mr. Buchanan circumnavigated Australia, 7,750 miles, in 21 days. On the right is the Gourdou-Leseurre monoplane (300 h.p. Hispano-Suiza engine and Rateau supercharger), which, piloted by M. Callizo, put up the new World's Height Record of 12,066 m. on Oct. 10. On the left is shown the Fairey III D. (360 h.p. Rolls-Royce engine) on which Wing-Commander Goble and Flg. Off. McIntyre flew round the coast of Australia, 8,568 miles, in 90 flying hours. Finally, at the bottom are shown the two Douglas World-Cruisers (400 h.p. Liberty engines) which flew round the world, 27,534 miles, in 351 hrs. 11 mins. flying time or 175 elapsed days between Mar. 17 and Sept. 28.

would be instantly dismissed. He apologised profusely and said that he had been misled by her smart clothes into thinking that she was American. Thereafter he was most courteous and attentive.

This same Englishwoman said that while she was in Japan there were numbers of American tourists about and that as soon as a Japanese shopkeeper understood that she was English he would leave American customers and come and serve her. Rickshaw coolies and everybody else were the same. She got all the attention she could want as soon as they knew she was English. And they openly cursed all Americans.

Now that does not mean that the Japanese love us any more than they love the Americans. What it does mean is that the Japanese hate and despise the Americans and hope by being civil to us that they will be able to keep us at peace while they beat the American Navy and capture the command of the Pacific.

The position is in fact very much like that in 1914, when Germany was very civil indeed to us and hoped to keep us out of the war while she settled France in a short and sweet six-month campaign so that she could give all her attention to smashing Russia.

But there is this vast difference. Whereas in 1914 we were on the wrong side and ought to have held France quiet by diplomacy while we helped Germany to smash Russia, we have now the opportunity of doing the right thing. That is, we can again ignore the proffered hand of friendship and go to war with those who offered it. But we shall be allying ourselves with our own flesh and blood in America and not with our natural hereditary race-enemies as we did when we allied ourselves with Russia in 1914.

Perhaps after all we were right in fighting Germany. We had to discover our own strength in that way. And, as already shown, the war has done us an immense amount of good in that it has enabled us to become masters of our own souls. Also it showed us the Russians as they are in truth, liars, murderers, traitors and savages. At least we shall enter the next war knowing the military virtues of our American and German Allies and the vices of our Russian and Japanese enemies.

(To be continued.)

THE ROYAL AIR FORCE.

The London Gazette.

Air Ministry, Jan. 2.

General Duties Branch.—The following are granted perm. comns in the ranks stated (Dec. 31, 1924):—Sq. Ldr. V. Greenwood, Flg. Off. R. W. Hill. J. H. Parry is granted a S.S. comn. as a Flg. Off., with effect from, and with seniority of, Dec. 18, 1924.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—C. F. Roupell (Oct. 1, 1924); C. J. A. Delaney (Nov. 15, 1924); F. Boston (Dec. 14, 1924). Plt. Off. H. T. Messenger is confirmed in rank (Dec. 6, 1924)

The following are restored to full pay from half-pay (Jan. 1):—Air-Marshal Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O.; Flt. Lt. E. R. C. Scholefield, A.F.C., D.C.M.

Group Capt. P. B. J. de la Ferte,* C.M.G., D.S.O., is placed on half-pay, scale B, from Jan. 1 to 4, inclusive; Plt. Off. A. S. Hutton takes rank and precedence as if his appointment as Plt. Off. bore date Aug. 13, 1923 (reduction to take effect from Oct. 20, 1924); Plt. Off. G. L. Worthington is permitted to retain his rank on resigning his comn. (Oct. 22, 1924); Flg. Off. C. B. Godfrey is placed on the retired list, and is granted rank of Flt. Lt. (Dec. 31, 1924); the S.S. comn. of Plt. Off. M. Russell is terminated on cessation of duty (Dec. 31, 1924).

Stores Branch.—The following are granted perm. comns. in the ranks stated (Dec. 31, 1924):—Flt. Lt. W. A. O. Honey, Flg. Off. C. H. Pownall.

Reserve of Air Force Officers.—C. W. Sutcliffe is granted a comn. in Class A, General Duties Branch, as a Plt. Off. on probation (Dec. 30, 1924); Plt. Off. G. V. Yorke is promoted to the rank of Flg. Off. (Dec. 30, 1924); Flg. Off. H. Hickson relinquishes his comn. on account of ill-health and is permitted to retain his rank (Dec. 31, 1924).

[* Correctly "Joubert de la Ferté," properly addressed as Joubert.—Ed.]

Appointments.

General Duties Branch.—Group Captains P. L. W. Herbert, C.M.G., C.B.E., to No. 1 Grp. H.Q., Kidbrooke, pending taking over command, 31/12. R. Gordon, C.B., C.M.G., D.S.O., to No. 3 Grp. H.Q., Spittlegate, to command, 2/1.

Wing Commanders C. D. Breese, A.F.C., to No. 1 S. of T.T. (Boys), Halton, for technical duties, 9/1. R. H. Verney, O.B.E., to No. 3 Grp. H.Q. for technical staff duties, 16/1. F. L. Robinson, D.S.O., M.C., D.F.C., to R.A.F. Depot whilst attending course at Staff College, Camberley, 21/1.

Squadron Leaders P. C. Maltby, D.S.O., A.F.C., to Station H.Q., Sth. Farnborough, 5/1. R. H. Peck, O.B.E., to R.A.F. Depot on transfer to Home Estab., 4/12.

Flight Lieutenants E. S. Ades, to R.A.F. Depot on transfer to Home Estab., 11/12. E. R. C. Scholefield, A.F.C., D.C.M., to Experimental Section, R.A.E., Sth. Farnborough, 1/1.

Flying Officers J. W. Caddy, to R.A.F. Base, Gosport, 9/12. (Hon. Flt. Lt.) F. P. Smythies, to R.A.F. Base, Calshot, 10/12. W. Smith, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 7/12. H. A. J. De S. Barrow, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 11/12. P. J. Phelan, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 8/12. J. F. V. Sugars, to R.A.F. Depot, 30/12. H. J. Brown, to No. 1 F.T.S., Netheravon, 2/1. W. G. Jones, to I.A.A.D., Henlow, 10/1. G. C. Sclater, to No. 1 S. of T.T. (Boys), Halton, 28/12.

Pilot Officers R. W. E. Bryant, to No. 29 Sqdn., Duxford, 30/12. P. P. Grey, to No. 19 Sqdn., Duxford, 30/12. G. D. Venables, to No. 4 Sqdn., Sth. Farnborough, instead of to No. 13 Sqdn. as previously notified, 30/12. S. E. Bulloch, to remain at No. 2 F.T.S., Digby, instead of to No. 4 Sqdn. as previously notified.

Medical Branch.—Flight Lieutenants H. McW. Daniel, M.D., to No. 41 Sqdn., Northolt, 6/1. A. E. Henton, to R.A.F. Depot. 9/1. (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., to C.F.S., Upavon, 3/1.

Flying Officers W. A. Beck, M.B., D.P.H., and J. Parry-Evans, to R.A.F. Depot, 22/12.

The Half-Yearly Promotion List.

The Air Ministry announces that the undermentioned are promoted with effect from Jan. 1, 1925:—

General Duties Branch.

Air Commodores to be Air Vice-Marshals:—C. L. Lambe, C.B., C.M.G., D.S.O., J. M. Steel, C.B., C.M.G., D.S.O.

Group Captains to be Air Commodores:—C. L. N. Newall, C.M.G., C.B.E., A.M., A.D.C., R. Gordon, C.B., C.M.G., D.S.O.

Wing Commanders to be Group Captains:—C. L. Courtney, C.B.E., D.S.O., S. A. Hebden, O.B.E., L. W. B. Rees, V.C., O.B.E., M.C., A.F.C.

Squadron Leaders to be Wing Commanders:—E. Osmond, C.B.E., A. H. S. Steele-Perkins, O.B.E., W. S.* Douglas, M.C., D.F.C., P. C. Maltby, D.S.O., A.F.C., E. L. Tomkinson, D.S.O., A.F.C., D. C. S. Evill, D.S.C., A.F.C., R. F. S. Morton, T. L. Leigh-Mallory, D.S.O., Sir N. R. A. D. Leslie, Bt., C.B.E.

Flight Lieutenants to be Squadron Leaders:—J. R. Howett, E. M. Pollard, H. E. F. Wyncoll, O.B.E., M.C., C. A. Ridley, D.S.O., M.C., G. C. Pirie, M.C., D.F.C., C. E. H. James, M.C., W. W. Hart, M.B.E., J. H. Simpson, G. H. Hall, A.F.C., A. F. Brooke, J. C. Slessor, M.C., W. D. Budgeon, O.B.E., J. J. Breen, P. Huskinson, M.C., A. Price Maurice, D.F.C., L. G. S. Payne, M.C., A.F.C., T. Q. Studd, D.F.C., C. W. Mackey, J. L. Vachell, M.C., H. Dawes, M.B.E.

Flying Officers to be Flight Lieutenants:—W. V. Simons, G. W. Hemming, D.S.C., H. A. Hamersley, M.C., R. D. Starley, M.C., H. N. C. Robinson, M.C., D.F.C., A. D. Rogers, A.F.C., L. Eardley-Wilmot, F. H. Isaac, D.F.C., J. D. S. Denholm, J. M. J. C. J. I. Rock de Besombes, J. A. Hollis, N. C. Saward, F. C. B. Greene, H. C. Calvey, C. F. Briggs, C. P. Brown, D.F.C., D. H. Humphreys, S. M. Park, F. H. D. Henwood, D.F.C., G. G. Walker, M.C., C. F. Toogood, B. R. Carter, A.F.C., W. N. Cumming, W. J. Umpleby, J. B. Allen, F. H. Shales, E. J. L. Hope, W. V. Hyde, G. S. Shaw, G. Birkett, W. E. Staton, M.C., D.F.C., J. T. Paine, K. L. Boswell, A. P. Ritchie, A.F.C., W. N. Plenderleith, A. J. Rankin, W. R. B. Annesley, A. P. Davidson.

[* Sholto Douglas.—Ed.]

Stores Branch.

Flying Officers to be Flight Lieutenants:—C. H. Pownall, T. J. Organ, C. H. Masters, P. F. Connaughton, H. J. Barnham.

Accountant Branch.

Squadron Leader to be Wing Commander:—C. G. Murray, O.B.E.
Flying Officer to be Flight Lieutenant:—A. E. Vautier, M.C.

Medical Branch.

Squadron Leader to be Wing Commander:—T. S. Rippon, O.B.E.
Squadron Leader to be Hon. Wing Commander:—E. Huntley, M.B., B.S.

Flight Lieutenants to be Squadron Leaders:—J. T. T. Forbes, J. Kyle.

Flight Lieutenants to be Hon. Squadron Leaders:—W. R. Reith, M.D., A.M., J. W. H. Steil, M.B.

Princess Mary's Royal Air Force Nursing Service.

Acting Senior Sister to be Senior Sister:—Miss M. Moddrel.
Sister to be Senior Sisters:—Miss C. E. Jenkins, Miss E. M. Blair.
Sister to be Acting Senior Sister:—Miss E. R. James.
Staff Nurse to be Acting Sister:—Miss K. M. Beall.

The New Year Honours.

The Order of the Bath:—Royal Air Force, C.B. (Military Division), Air Commodore Arthur Murray Longmore, D.S.O.

Royal Air Force Awards.

His Majesty the King has been graciously pleased to approve of the following awards to the undermentioned officers and Airmen of the Royal Air Force:—

Awarded the Air Force Cross:—Flt. Lt. Rollo Amyatt de Haga Haig, Flg. Off. Eustace Jack Linton Hope.

Awarded the Air Force Medal:—240216 Sergeant Jackson Sydney Brett.

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A FAIREY SERIES III SEAPLANE (450 h.p. Napier engine) in flight over the Mediterranean near Malta.

THE FAIREY IIID SEAPLANE.

THE FAIREY SERIES III SEAPLANE is the standard general service seaplane in the Royal Air Force and is also employed by the Royal Australian Air Force, the Swedish and Portuguese Naval Air Services. It was on a machine of the Series III type, but fitted with larger wings, floats, and special fuel tanks that Admiral Gago Coutinho and Capt. Sacadura Cabral made their flight from Lisbon to St. Paul's Rocks in 1922. It was on a standard Series III that they completed their flight to South America after the loss of the special machine. In April and May of this year a Fairey Series III Seaplane fitted with a 360 h.p. Rolls-Royce engine and piloted by Wing Commander S. J. Goble, D.S.O., O.B.E., D.S.C., and F/O McIntyre, O.B.E., A.F.C., of the Royal Australian Air Force flew round the entire coastline of Australia, a distance of 8,568 miles in 90 flying hours, a flight which may be regarded as one of the most remarkable flights yet made by a Service machine on Service duties.

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AN ESSAY IN PESSIMISM.

For six consecutive New Years since the end of the war it has been usual in this place to survey the past twelve months of aviation in a search for reasons for continued hopefulness as to the future. Patience and optimism both have their good points—the two in combination, however, can scarcely be expected to be indefinitely self-supporting. It is perhaps time rather to consider why progress in aviation is so painfully slow, than to look hopefully for indications that it may some day accelerate appreciably.

Not that the past year has been particularly disappointing. On the contrary it has in many ways been a good year for aviation throughout the world. In this country the Air Ministry has really placed a reasonable number of orders. The British Aircraft Industry has on the whole had the busiest and most profitable year since the conclusion of peace. The matter of providing the country with a really useful Air Force is at last being dealt with on a practical scale and by every sign that one can discern, 1925 should be an even more prosperous year than 1924. This is eminently satisfactory—in its way.

A Belated Recognition.

But to the present writer it seems a little less a fulfilment of hope than a somewhat belated recognition of the inevitable. It is inconceivable that any reasonably intelligent being after the experience of the late war can have believed that this country could afford to do without an efficient and powerful Air Force, and a prosperous Aircraft Industry behind that Force.

Having taken six years to consider the problems of the permanent Air Service, to the development of its organisation, and to the technical development of its equipment, it might reasonably have been hoped that the new squadrons now being formed and equipped should show unmistakable evidence that the past few years had been usefully employed.

In regard to many matters one cannot pretend to judge as to the value of the measures taken for the permanent organisation of the R.A.F. It is almost inevitable that the actual administrative machinery of the Force should now work much more efficiently and smoothly than it did in the war-time Services. Somebody undoubtedly deserves to be hanged if that is not the case.

So far as concerns the keenness and efficiency of the personnel of the Air Force it is possible to feel well content. To a large extent the present R.A.F. has been picked from amongst those who served in the Force during the war and who were not found altogether wanting. It may be that the process of picking could have been better done—but it has produced a body of fit and keen officers and men who will not fail of their duty in any event.

An Artificial Atmosphere.

But in the matter of equipment it is difficult to feel so satisfied. The Air Ministry itself is a product of the war. Most of its technical staff started on their aeronautical education during the war, and the whole of their outlook on aeronautical problems has been influenced by the extremely artificial conditions which obtained during that period. So far as the development of aircraft was concerned at that time, the policy of concentrating on the improvement in detail of a known and more or less standardised form of machine was justified—time could not be spared to embark on radically new designs which might take years to bring to a useful state of development—or might prove to be total failures.

In the six years that have intervened there have been plenty of opportunities for the consideration of schemes for the more radical improvement of the aeroplane as a whole, for embarking on experiments with types of aircraft or engines likely to require some considerable period for their full development. But it is extremely difficult to avoid the conclusion that the Air Ministry as a whole still maintains its war-time attitude on such matters. It appears to regard the classical stick and string type of biplane as still the only practicable one.

A Restraining Influence.

It has succeeded in restraining any efforts to experiment seriously with radically different arrangements of the structure to a few light aeroplanes, and, as far as one can at present remember, to two larger machines. Of these one has apparently been abandoned, despite extremely promising results, on account of a difficulty with controls which could certainly be rectified, with relatively little further trial. The other, it seems, was so metamorphosised by the efforts of the official experts, that it ceased in any way to resemble the intentions of the original designer, and its tests came to a disastrous end as a result of computations of the necessary tail setting made on an officially-approved, but undoubtedly misleading, basis.

As a result of this attitude, the new machines which the R.A.F. is receiving to-day, are just such machines as it might have been expected to receive early in 1920, had the war continued so long. It is just conceivable that for certain purposes the stick and string type of biplane—perhaps translated into steel and greatly refined in detail—will continue to hold its own against less well-tried types for years.

Unknown Possibilities.

But no one can be certain that this will prove to be the case until the alternatives have been very fully explored. If the aeroplane, as we know it to day—a fragile and costly affair, of limited range and carrying capacity—is susceptible of improvement only along the lines which have been followed so steadfastly in this country since the beginning of the war, then we must abandon our fuller hopes for aviation and reconcile ourselves to the fact that the aeroplane will remain a costly but necessary military weapon, and an appliance having but a very limited value for other purposes.

The possibilities that by improvement in aerodynamic form, and by the use of entirely different methods of construction, the aeroplane can, in a reasonably short time, be made into a cheap and efficient high-speed vehicle, are so great, that to refuse to experiment with radically new types because it is probable that serious practical difficulties will be encountered in their development, can only be regarded as a ridiculously short-sighted policy—both from a military and from a commercial point of view. The Air Ministry however shows no inclination to embark on any other policy—and its control over aircraft work of any kind in this country is now so complete that it is exceedingly difficult for any non-official body or firm to do otherwise than to submit to its directions.

Hope—such as there is—lies in the fact that if the Air Ministry continues along its present lines, and is forced—as it must be forced—to order aircraft on a really large scale, some of the more enterprising of our aircraft constructors will become sufficiently rich and powerful to tell the Air Ministry to mind its own business while the firm itself undertakes experimental development work on broad lines.

The Danger of "Experts."

One of the most serious handicaps to the rapid development of aviation to-day is the existence of a superfluity of so-called experts. Many of these are quite excellent people in their limited way. Some of them have a really vast knowledge of what aircraft and aviation are to-day. Most of them are extremely good at foreseeing difficulties. Few of them realise how very little any one really does know about aviation as a whole, or how astonishingly limited is our experience of aircraft of the innumerable different types both of form and of structure which it is possible to produce.

And these experts emit opinions—some of them in public, many of them in private—which, taken on the whole, are pessimistic concerning every possibility outside the range of their present practical experience. This bulk of pessimistic opinion is doing more to retard the progress of aviation in this country than all the tosh which appears in the daily press on the subject of the aeroplane and its possibilities. For there is behind it some basis of experience and some semblance of authority, and in general it penetrates and pervades the councils of those who control expenditure on aeronautical experiments.

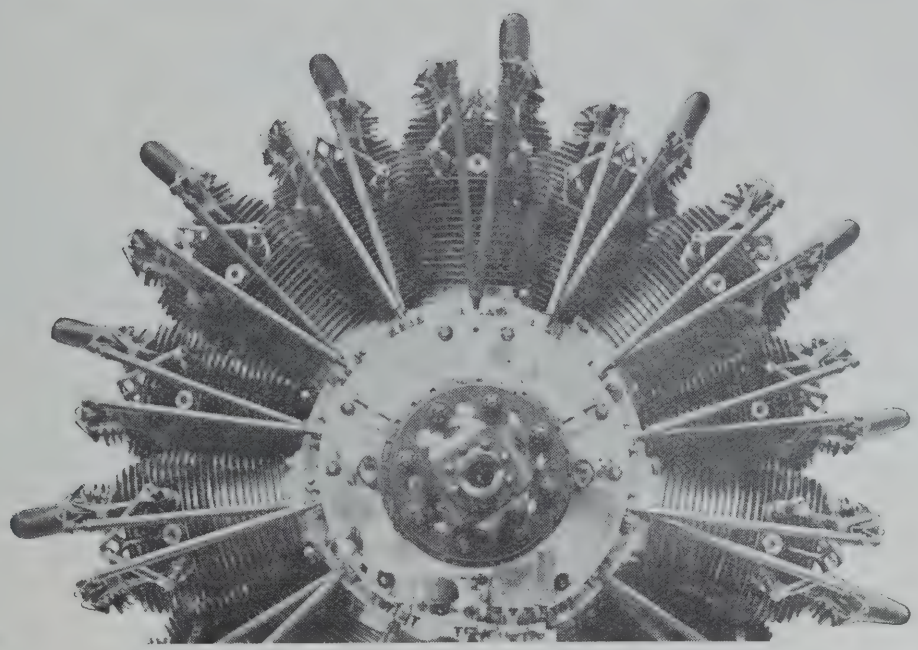
A Contrast.

It is only necessary to make a cursory mental comparison between the variety in type of the exhibits at the last Paris Show and the lack of such variety which would necessarily be displayed in any British exhibition of present-day aircraft, to realise that the mental attitude of the technical section of the Air Ministry has limited British experimental work to within a dangerously circumscribed field.

The Air Ministry, regarded as a Government Department, is an excellent example of its class. But it is a British Government Department, it has an inevitable tendency to play for safety, to discourage enterprises, the result whereof cannot be foreseen, that is characteristic of such institutions and it is an eminently unsuitable body for the control of an experimental undertaking which is essentially of a highly-adventurous nature, calling for precisely those qualities least in favour in official circles.

What is wanted in this country at the moment is the production of a reasonable quantity of experimental aircraft of types which would be classed as freaks by the majority of our more self-satisfied "experts." And it is particularly important that these freaks should be built under the unfettered control of people who believe in their virtues, and that their design should not be marred by the well-meant efforts of conservative-minded technicians to bring them into partial conformity with their own orthodox ideas. At the present moment we are not producing anything like enough aircraft that are total and absolute failures.

It is possible to build an orthodox and successful aeroplane and to learn nothing from the experience. In fact, the effect, if any, is rather to confirm a belief in the sufficiency



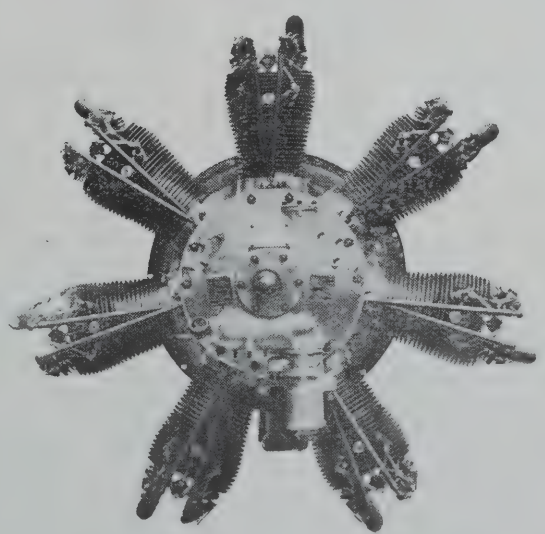
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Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
760 lbs., 346 kgs.



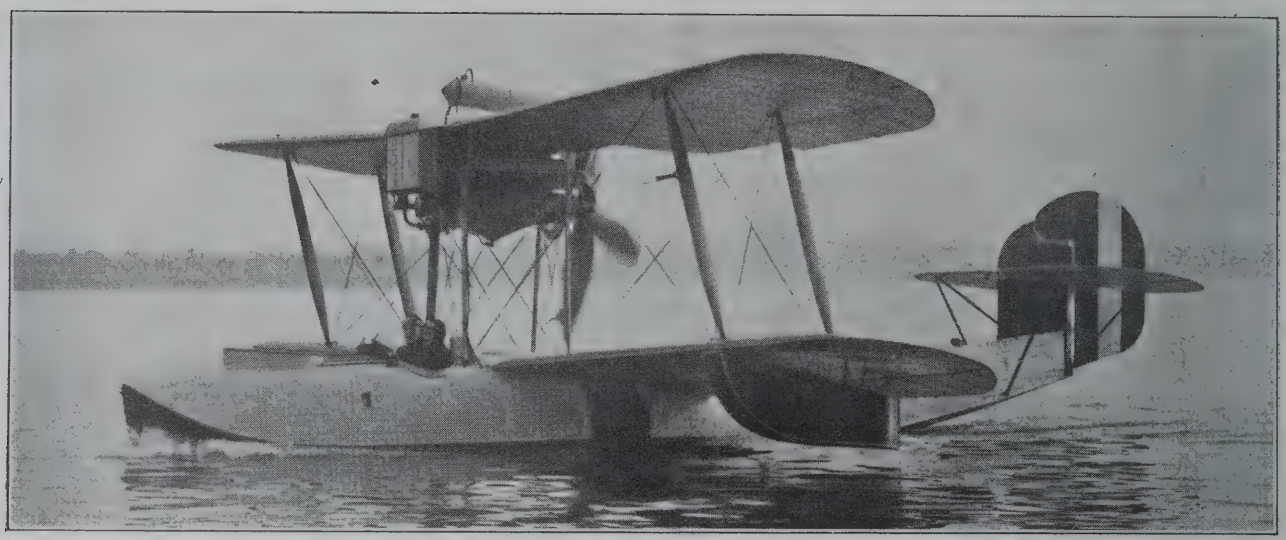
The
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The "Lynx" is an ideal engine for Training Aircraft. It is most accessible —being superior in this respect to any other aircraft engine. Fuel consumption is very low and construction very simple.

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1,650 r.p m., 175 b h.p.
Petrol consumption,
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Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
460 lbs., 209 kgs.

of the knowledge already possessed. It is difficult to build a failure without at least discovering that one knew less than one had believed, which is, after all, one of the strongest of incentives to the acquisition of further knowledge. And, just now, further knowledge is what we need in this matter.—W. H. S.

THE CANADIAN VICKERS "VEDETTE" FLYING BOAT.



The photographs and general-arrangement drawings here reproduced show a new flying boat recently produced by Canadian Vickers Ltd., of Montreal, for forest-fire patrol and photographic work. Up to the present this class of work in Canada has been carried out with Vickers Vikings or with H.S.2L. flying boats—both types being of unnecessarily large capacity for the work.

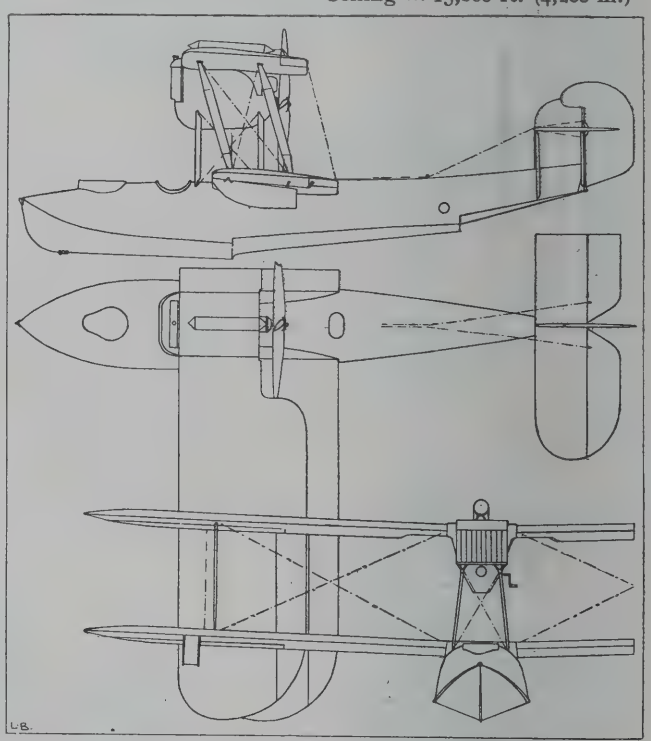
This machine was designed under the supervision of Mr. W. T. Reid, who joined the firm in June, 1924. He had on his staff one assistant, Mr. Newall, with previous experience of aircraft design, yet the machine was out and flying by Nov. 3—an amazingly short time wherein to organise a drawing-office staff, and to design and construct a new machine.

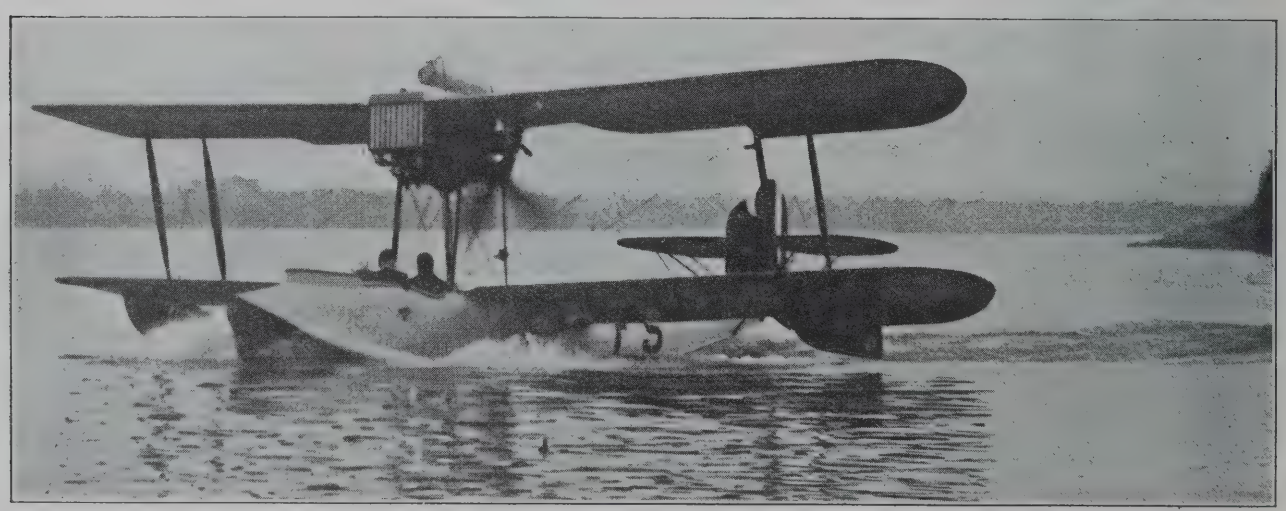
The machine is fitted with a Viper engine of 200 h.p. which gives it an adequate performance. As, however, the authorities in Canada seemed a little sceptical as to the possibilities of so low-powered an engine, it was designed to take either a Rolls-Royce Falcon or a Viper. It was first tested with the Falcon, but the Viper has now been installed.

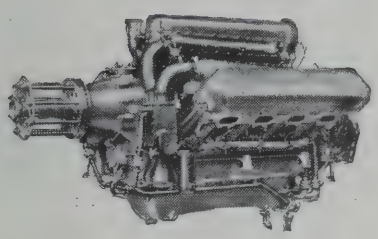
The "Vedette" has an excellent water performance—getting off in about 10 to 15 seconds, is very dry, and shows no vice in landing. Altogether she seems to be an extremely useful type for work of the class for which she was designed, and her production reflects great credit on all concerned.

SPECIFICATION.

Span 42 ft. (12.8 m.)	Disposable load (including pilot) ... 480 lbs. (218 kg.)
Length 32 ft. 10 in. (10 m.)	Total weight 3,203 lbs. (1,452 kg.)
Height 11 ft. 9 in. (3.58 m.)	Engine Viper 210 h.p.
Wing area 490 sq. ft. (15.5 m².)	Wing loading 6.55 lbs./sq. ft. (32 kg./m².)
Weight empty ... 2,263 lbs. (1,025 kg.)	Power loading 15.4 lbs./h.p. (7.15 kg./h.p.)
Fuel and oil 460 lbs. (209 kg.)	Max. speed 98 m.p.h. (158 km.h.)
Landing speed ... 48 m.p.h. (77 km.h.)	Climb to 5,000 ft. (1,520 m.) 9½ mins.
	Ceiling ... 13,800 ft. (4,200 m.)







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SOME EXAMPLES OF FRENCH METAL WORK FROM THE PARIS SHOW

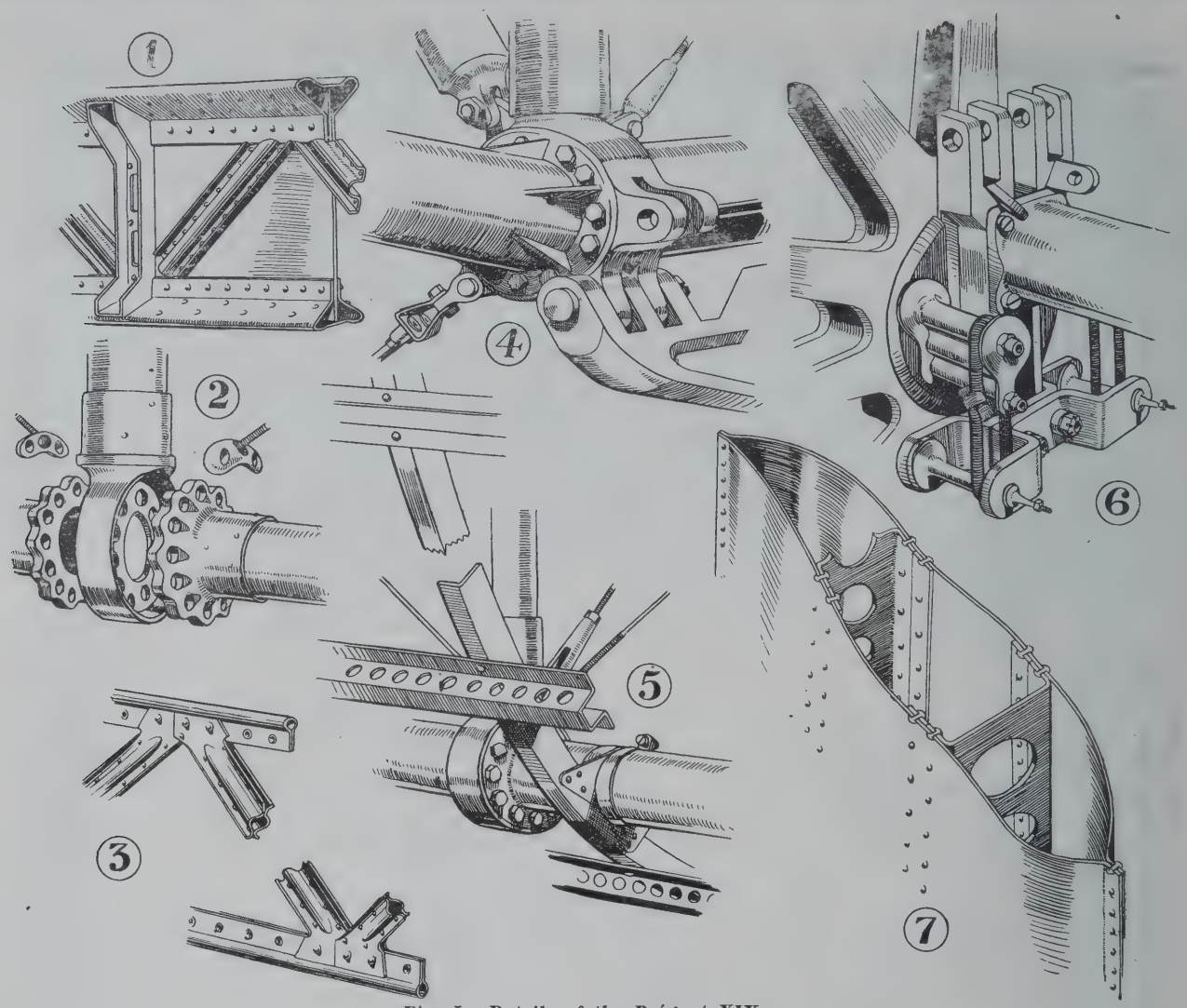


Fig. I. Details of the Bréguet XIX.

BREGUET.—In Fig. I are shown some details of the Bréguet type XIX. At 1 is shown a wing-spar, which is a built-up H section. The top and bottom members are of a simple drawn section, the web is flat plate, and the diagonal stiffeners could be drawn and cut off to length or stamped in the required lengths. The vertical stiffeners are stampings—one of these is fitted under each rib.

2 shows a fuselage joint. The longerons, of duralumin tubes are in relatively short, straight lengths. The joint-components are duralumin die-forgings, pinned to the tubes forming the fuselage frame. The flanged faces on the longeron sockets, and the corresponding face of the strut socket are machined to a small angle out of normal to the tube axis, and by rotating the parts relatively to each other the same fitting can be used for a series of different angles between consecutive longeron lengths. Only two types of fitting are required for the whole of the fuselage. The bracing-wires have ball-end fittings, as shown, carried each by a pair of the bolts of the main joint. Cross-wires are carried from lugs on the strut-socket itself. 4 shows a joint of essentially similar nature, which provides for the attachment of a wing spar, the undercarriage, undercarriage cross-bracing, an engine-bearer tube and bracing-wires.

3 shows the rib construction. The rib booms are of very simple form. All the diagonals are of identical section and have identical ends. There are 64 different overall lengths for these diagonals, but all are formed with one die—which presses out one end of the diagonal only at the time. The half-formed stamping is then turned round and the other end pressed, the correct length being secured by a jig.

At 5 a standard fuselage joint and the arrangement of the fairing frame-work is shown.

6 shows the wheel and axle fitting. The wheel itself is an Alpax casting. The axle is bolted to a steel block fitted with lugs for the attachment of the undercarriage leg. On machined-slides on the block slides the wheel hub—the block has a projection passing right through the hub, carrying on its outer end lugs for the attachment of the wing bracing.

7 shows the construction of the raking interplane strut which, in normal flight, is really a lift wire. It will be seen that the elements employed for building up the structure are none of them of a very intricate nature, and can easily be produced at a reasonable cost, once the

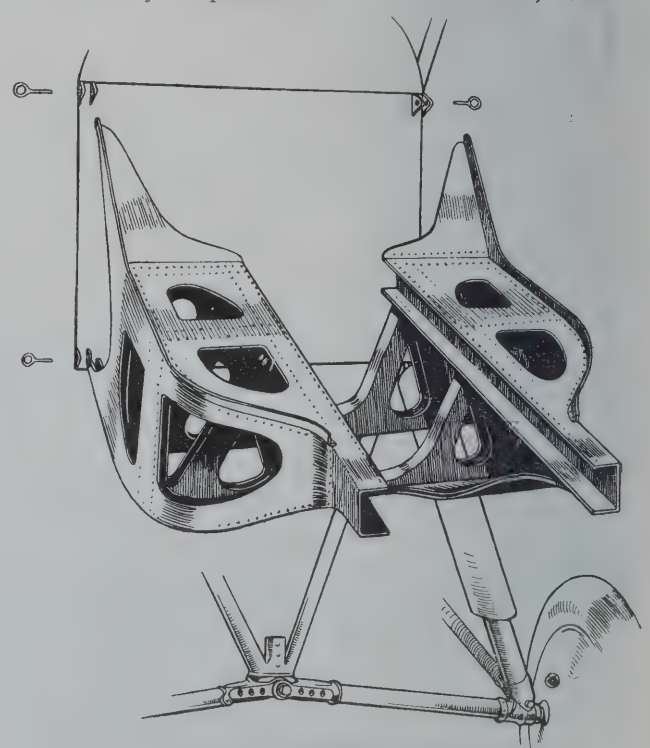


Fig. II. The Potez removable engine-mounting.

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THE BEST IN THE WORLD

Some extracts concerning the recent flight of 8,500 miles round Australia from "The Aeroplane" of May 22nd, 1924, entitled

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"A performance which may fairly be claimed as **the finest flight in the history of aviation.**"

"The durability and reliability shown by the Fairey seaplane and the Rolls-Royce engine have **established once more the reputation of English aircraft** design and material in the esteem of the aeronautical authorities of foreign nations "

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Some Successful Flights made by Rolls-Royce Engines:

England to Australia	11,500 miles
England to S. Africa	6,281 miles
England to Sweden (and back)	2,450 miles
England to Constantinople	2,160 miles
Across the Atlantic	1,890 miles
England to Finland	1,100 miles
England to Warsaw	1,050 miles
England to Madrid	855 miles

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necessary dies and jigs are in existence. Fig. II shows a removable engine-mounting by H. Potez, used on a two-seat fighter. This is a straightforward flat-plate job of a type which would be impossible in a denser material. One has doubts concerning the method of attachment to the fuselage, but this detail could be improved without difficulty.

S.E.C.M.—Fig. III shows some of the work of the Société d'Emboutissage et de Constructions Méchaniques. The top figure shows the spars and ribs of one of their smaller machines. The rectangular spars are plain drawn tubes. The construction of the ribs is obvious. Below is seen a typical, if somewhat complicated, fuselage joint of the type developed by this firm.

This particular joint represents a fair outlay in dies, but for the usual straightforward joints the same type of construction is relatively simple.

At the bottom is the wing rib of a Dewoitine D.1C.1, which, in duralumin, has been constructed by the S.E.C.M. The whole rib is of plain circular tube with die-pressed sheet clips at all the joints. The ribs are attached to the spars by flanges left on the clips at the adjacent joints.

Generally the S.E.C.M. type of construction seems to be thoroughly well adapted for rush production. One well-equipped press shop—such as the S.E.C.M. appear to possess—could produce fittings to keep several assembling works going at once, who would have practically nothing to do except cut tubes to length and put in rivets.

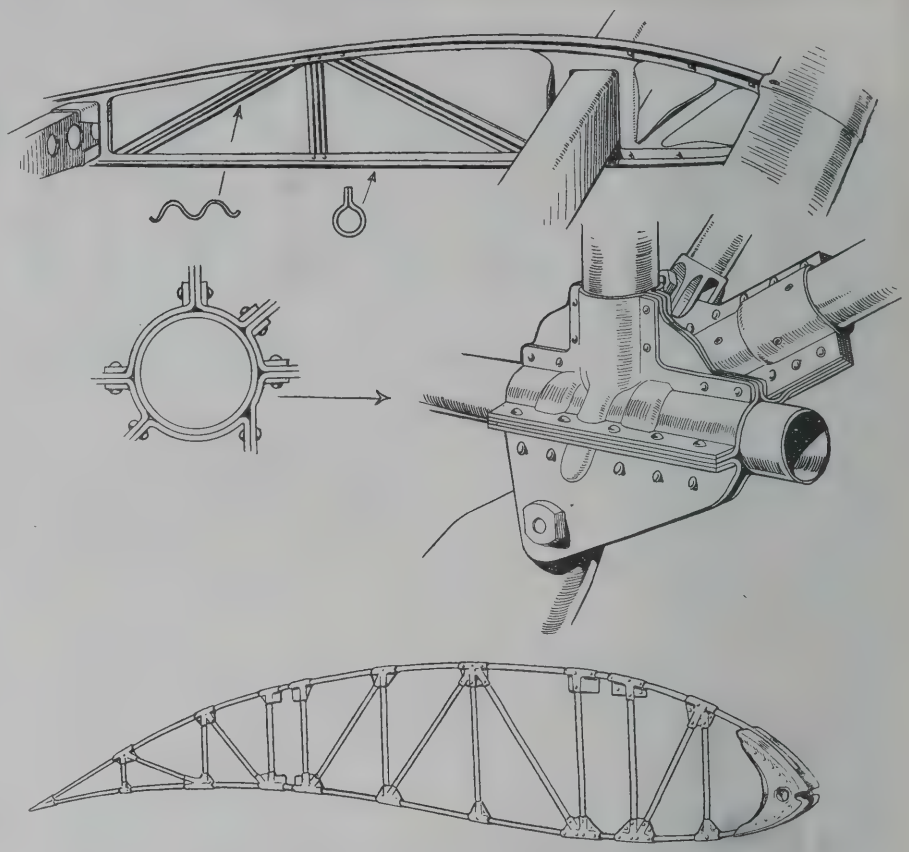


Fig. III. S.E.C.M. Metal-work.

The Institution of Aeronautical Engineers.

On Friday, Jan. 9, Mr. R. J. Parrott is to read a paper on the History and Evolution of the Avro Training Machine, at the Engineers' Club, Coventry Street, W.1. This paper, which is to be illustrated with a large number of lantern slides, traces the development of this well-known type of machine, from the period of the first Avro tractor biplane up to the present time, and cannot fail to be of great interest.

A Trade Party.

The designing staff of the Gloucestershire Aircraft Co., Ltd., held their annual dinner on Dec. 12, some 65 members and guests being present. Mr. H. P. Folland was in the Chair, supported by Mr. H. E. Preston, Mr. C. H. Denley, the Secretary, Mr. Larry Carter, test pilot, and Mr. E. C. Green, of the Inspection Department. There was a good deal of friendly leg-pulling between the firm's officials and Government officials and a very pleasant evening was spent.





(Photographs by Central News.)

THE FIRST BIG BRITISH METAL FLYING BOAT.—The new Short boat with duralumin hull (Rolls-Royce Eagle IXs).

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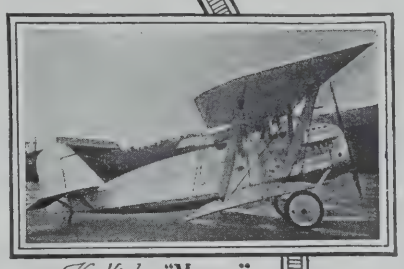
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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 6; Wednesday, 0; Thursday, 1; Friday, 0; Saturday, 4; Sunday, 0.

IMPERIAL AIRWAYS, LTD.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 14, passengers 35, freight 7 tons.

AIR UNION:

Paris—London: Machines 3, passengers 6, freight 8 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 5, passengers 8.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 14, carrying 35 passengers. Foreign machines: 8, carrying 14 passengers.

Comparative Figures:

For week ending Jan. 4:

Machines, 22; Passengers, 49; Crews, 25; Total personnel, 74.

Corresponding week, 1924:

Machines, 35; passengers, 58; Crews, 57; Total personnel, 115.

Corresponding week, 1923:

Machines, 41; Passengers, 109; Crews, 80; Total personnel, 189.

Corresponding week, 1922:

Machines, 15; Passengers, 36; Crews, 23; Total personnel, 59.

Corresponding week, 1921:

Machines, 21; Passengers, 15; Crews, 25; Total personnel, 40.

Croydon Notes.

The gales of the past week have interfered seriously with the regular operation of the air lines. At one time during the week it was suggested that Croydon aerodrome should be converted into a seaplane base.

Tuesday was a blank day, and on New Year's Day the only machine to get through was a D.H.34, piloted by Mr. George Powell, and carrying three passengers. On Friday and on Sunday, gales stopped all air traffic, and on those days most of the sea traffic was held up also.

On Saturday an old man who is on a walking tour, carrying his belongings in a perambulator, arrived from Bath, and was transported by air to Paris, whence, like Felix, he will keep on walking.

The aerodrome was so waterlogged on Saturday, that machines had great difficulty in taking off, and one D.H.34 stuck in the mud, where an excavation party went out to search for it.

Mr. Muir was flying on the Surrey Flying Services Avro during the week carrying certain press photographers over the flooded areas.

The Surrey Flying Services are busily engaged in preparing machines for an intensive joy-riding programme all over the country during the forthcoming summer.

Sir Sefton Brancker's Tour.

Sir Sefton Brancker who is engaged on a flying tour to India to prospect the proposed Airship and aeroplane route to the East, arrived at Karachi on Dec. 30 in a D.H.50 piloted by Mr. Alan J. Cobham The party left Stag Lane on Nov. 20.

On Jan. 1 Sir Sefton proceeded by sea to Bombay to meet a party from England which included Group-Captain P. F. M. Fellowes, also engaged in preparing the way of the airship.

Sir Sefton reached Bombay on Jan. 3, and, accompanied by Sir Lawless Hepper, Director of Development, Bombay, inspected Bombay City and Harbour and the neighbouring island of Salsette and the Government aerodrome at Andheri for possible sites for mooring masts.

After inspecting Bombay he went back to Karachi, whose claims to be the Indian Air Terminal station, will be examined. The Bombay aerodrome is some 13 miles from the city, but at Karachi, the aerodrome is practically at the gates. Rail distribution is better and simpler from Bombay than it is from Karachi.

Sir Sefton will subsequently fly to Delhi to confer with the Government of India.

Air Mails.

The Postmaster-General has communicated the following particulars of Air Mail traffic during 1924:—

There was a slight increase in the letter Air Mail to Paris (about 1,620 lb. in 1924 as against 1,550 lb. in 1923).

With the resumption of more normal conditions in the ordinary Mail service to and from occupied Germany, the letter Air Mail to and from Cologne showed a decline from about 9,700 lb. in 1923 to about 5,700 lb. in 1924.

The London-Hanover-Berlin Air Mail during its period of operation from June 10 onwards carried about 1,350 lb. letters for Germany and places beyond.

An afternoon Air Mail to Holland offered considerable advantage for midday postings from London not only to Holland, but to Germany and beyond; the weight of Mail carried during three months of operation was however only 84 lb.

Declines were shown in the air letter traffic to Holland (975 lb. as against 1,470 lb. in 1923), and to Belgium (190 lb. as against 237 lb.).

In consequence of the competition of the weekly motor Mail via Damascus there was also a falling off in the letter Air Mail to and



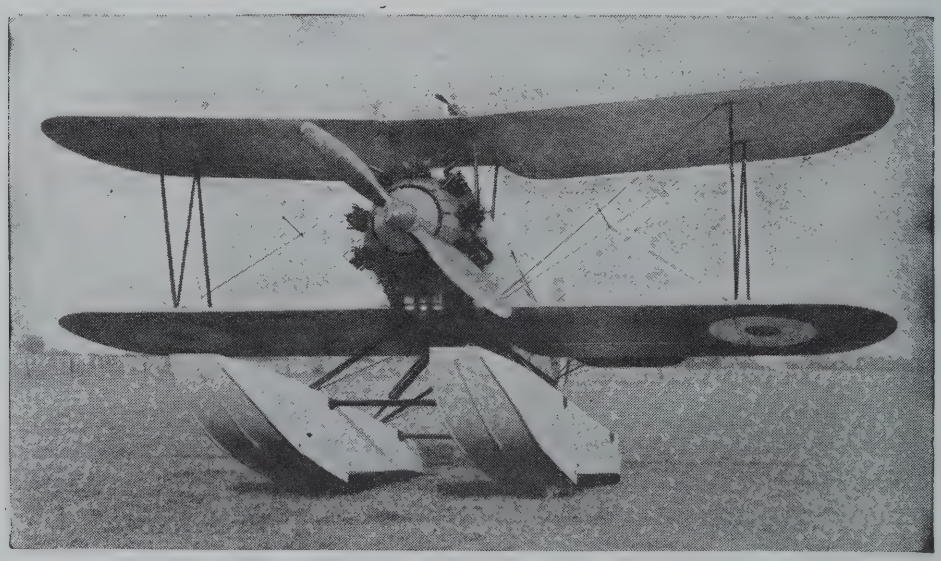
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November 28, 1924.

The Business Manager,
De Havilland Aircraft Co. Ltd.,
Stag Lane Aerodrome,
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Middlesex,
England.

Dear Sir,

We wish to take this opportunity of expressing our great appreciation of the D.H.50 A. machines which you recently supplied to us.

The performance and efficiency of these machines is truly remarkable and the high-class of workmanship and materials used leaves nothing to be desired.

These machines are now in regular operation on our route, which as you know, is the longest regular passenger airway in the world, and they are giving us the greatest possible satisfaction.

Yours faithfully,

WESTERN AUSTRALIAN AIRWAYS LIMITED.

NB/MP Managing Director.

8715

from Iraq (under 10,000 lb. in 1924 as against about 18,900 lb. in 1923). The Air Mail to Morocco and Algeria showed a 53 per cent. increase from 1,137 lb. to about 1,740 lb.

From May 26 facilities were offered for the substantial acceleration of letters posted throughout the day for Denmark, and of night Mail postings from London to Hamburg and district and to Sweden and East Norway, by the use of a Rotterdam-Hamburg-Copenhagen air service combined with a supplementary morning air service from Hamburg to Copenhagen. The number of letters posted by this route was, however, small, and the total weight carried (for all the countries served) was only about 270 lb. This route was closed for the winter early in October.

An inland air Mail from Belfast to Liverpool was in operation during May and June, and, in the course of about seven weeks, attracted over 1,000 lb. of Mail.

PARCELS.

The air parcel traffic to Paris increased by over 14 per cent. to about 27,200 lb., and that to Holland by nearly 20 per cent. to about 14,250 lb.

There appeared to be little demand for the facilities offered during the summer for air transmission of parcels to Denmark, Norway and Sweden; the total quantity sent to these countries was only 850 lb.

To Germany, on the other hand, a total weight of about 4,100 lb. was sent by air via Hamburg during the four months June—September, while in the succeeding three months the quantity sent at the same rate of postage via Cologne was about 5,800 lb. During the same three months the German Post Office forwarded to this country by the Cologne-Croydon British air service about 2,400 lb. of air parcels posted by civilians. In addition parcels to the total weight of 1,600 lb. were posted for conveyance by this air route to and from the British Army of the Rhine during the year under review.

A Case for the Pilots' Federation.

If the Pilots' Federation wishes to justify its existence it should concern itself immediately with the case of Mr. R. H. MacIntosh.

It will be remembered that at the beginning of December, Mr. MacIntosh was appointed to fly for the King of the Hedjaz. As he was an officer of the R.A.F. Reserve the Air Council, after he had been despatched East, withheld permission to him to join King Ali.

Mr. MacIntosh was ordered to the East in a tremendous hurry and though he did not have time to see the Air Ministry himself, he was told very definitely by people whose word he had every reason to believe that permission would be granted to him to join King Ali.

Owing to circumstances outside his control he was left in Cairo without any ready money, and though he made every effort to keep his contract he was prevented from doing so, and has returned to this country.

He has been unable to obtain any pay for the period he was away from Croydon, and at the present moment has not been re-engaged by Imperial Airways Ltd., from whom he had six months' leave without pay. As flying is his livelihood it is necessary that he should get a job. Consequently it may be necessary for him to accept employment abroad. And yet with the summer season ahead there will be a dearth of first-class air-line pilots for the Continental routes.

There is no reason to strike, but a lot could be done by the Pilots' Federation in this matter if the officers tackle it in the right way.

Mr. MacIntosh has been flying regularly on the air routes since 1919 and has to his credit a large number of fine performances. He has never been a grumbler and has *not* asked one to deal with this matter. In fact it was with the greatest difficulty that one was able to extract the details of the affair from him. But one is not alone in feeling that he has been the victim of extremely bad luck, and one hopes that the Pilots' Federation will take immediate and successful action to prevent our own air lines from losing the services of one of the soundest pilots.—G. D.

The London-Paris Air Route.

Arrangements have now been completed for the lighting of the British section of the London-Paris air route. Including the cone light and the Neon light there are now nearly a dozen beacon lights installed at Croydon alone to show the confines of the aerodrome, and there are ten beacons each at Penshurst, Littlestone, and Lympne.

Mr. Basil Curtiss, of the Gas Accumulator Co., Ltd., has been responsible for the arrangements, and the operation of the lights is entirely automatic. Exhaustive tests with these lights will be made during the next six months.

Flying at Letchworth.

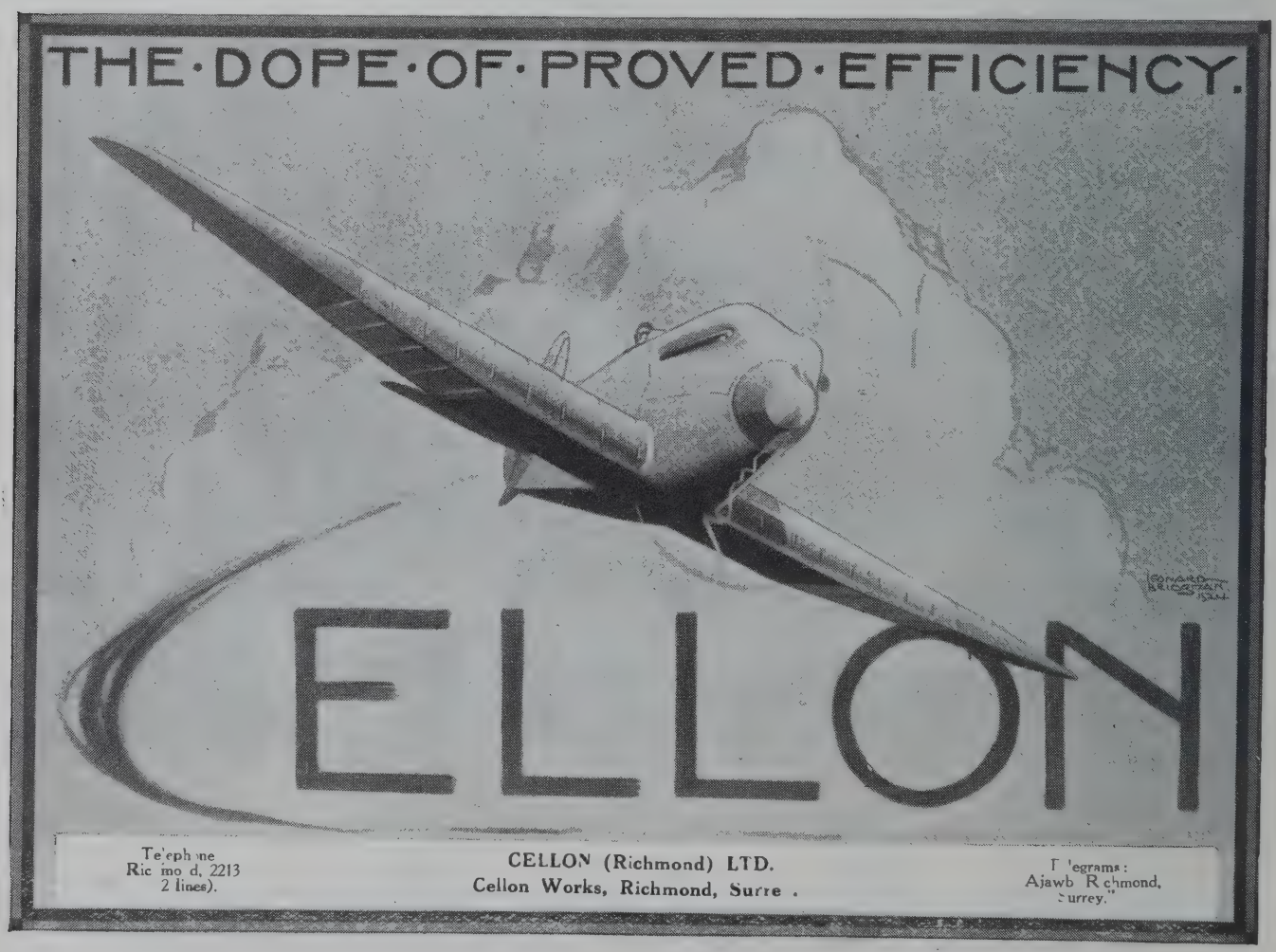
The Berkshire Aviation Tour has recently visited Letchworth. On the Sunday before Christmas, Mr. Parkinson, on an Avro, took up 140 passengers. There was much mist and fog about, and during every flight the machine disappeared from the view of those on the flying ground. But the garden-citizens seemed to be impervious to gloom.

Mr. Parkinson has just completed 400 hours' flying in seven weeks and three months on joy-riding.

D. A. Stewart.

The funeral of Mr. D. A. Stewart, who was killed in the accident at Croydon on Christmas Eve, took place at Hull on Dec. 30.

A service was held at the Church of The Transfiguration.



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Major Brackley represented Imperial Airways Ltd., and Flg. Off. Rogers represented No. 7 (Bombing) Squadron, R.A.F., to which Mr. Stewart belonged prior to joining Imperial Airways Ltd.

The Accident to the Aircraft G-EBBX.

The Air Ministry announces :—In view of the inquiries which have been made as to the intentions of the Air Ministry with regard to the investigation of the accident to aircraft G-EBBX, owned by Imperial Airways Ltd., on Dec. 24, the Secretary of State for Air desires it to be known that the whole circumstances of the accident have since the occurrence been under investigation by the Inspector of Accidents, who is charged with the duty of collecting all the evidence available and making a report thereupon. This duty calls *inter alia* for a close inspection of the wreckage of the aircraft and engine, the examination of all available eye-witnesses, and a full consideration of all the conditions under which the flight was made.

This preliminary investigation necessarily requires some time to complete, and in the meantime the Inspector of Accidents, although his inquiry is an entirely independent one, is prepared to give the Coroner any technical assistance he may require in the holding of the inquest.

When the preliminary investigation has been completed the Inspector of Accidents will make a report to the Secretary of State, who will thereupon determine whether it will be sufficient to publish the results of this investigation or whether it is desirable in the circumstances that a formal investigation should be held, and, if so, what form that investigation should take.

The Parachute Again.

M. Pitot, the well-known French test-pilot, was making a first flight on a new experimental machine at Villacoublay on Dec. 29, when for some unaccountable reason the machine got into an uncontrollable nose-dive at 1,200 feet. As soon as M. Pitot ascertained that the machine was out of control he made use of his parachute and succeeded in getting away from the machine, which, on hitting the ground, caught fire and was reduced to scrap.

Shell Again.

The route of the flight from Amsterdam to Batavia, recently accomplished by Mr. T. van der Hoop, was via Constantinople, Baghdad, Karachi, Calcutta, Rangoon, Bangkok, and Sumatra. On his completion of this flight Mr. van der Hoop commented cordially on the excellent organisation of the Shell people in laying down the supplies, and the uniformly excellent quality of the Shell Aviation Spirit which he used throughout his flight.

Aeroplane Fabric.

A number of inquiries have been received from time to time at this office as to the name of any firm who makes aeroplane fabric.

Will any manufacturer of this commodity kindly communicate with this paper for future reference.

What One Can Do, When One Wants To.

A certain periodical which gives prizes for Limericks built up round certain subjects, has this week selected "Singapore" as its theme. Fortunately the Editor of The Aeroplane is too busily engaged on cross-word puzzles (for which during his recent visit to the States he held the amateur championship of Sing-Sing), otherwise we might have had something like the following :—

To a Mongoloid Tartar from China
Said an Arabic Kurd from Regina
"That Singapore base—'T
Is a deuce of a waste"!
"Not at all," said a Celtic coal-miner.

G. D.

PERSONAL NOTICES.

ENGAGEMENTS.

GLENNY—BOYES.—The engagement is announced between Sq. Ldr. A. W. F. Glenny, M.C., D.F.C., R.A.F., only surviving son of J. S. Glenny, Esq., and Mrs. Glenny, of Glenville, Newry, Co. Down, Ireland, and Avice Noël, only daughter of the late George Boyes, formerly Chief Magistrate of Cape Town, and Mrs. Boyes, 39, Cholmley Gardens, West End Green, Hampstead.

MARRIAGES.

DEACON—GREIG.—On Dec. 30, at St. Mary Abbot's, Kensington, Capt. Heary Wynn Deacon, D.F.C., Royal Artillery, son of Mr. and Mrs. Alan Deacon, of 1, Campden House Chambers, W.8, to Jessie Moira, only daughter of the late Mr. W. G. Greig and Mrs. Greig, of 17, Campden Hill Court, W.8.

PAXTON—BRADFORD.—On Dec. 31, at Holy Trinity Church, Brompton Road, by Prebendary Gough, Flt. Lt. Anthony Landerdale Paxton, D.F.C., R.A.F., elder son of Mr. J. T. T. Paxton, of Little Menlo, Upper Norwood, and the late Mrs. Beatrice Paxton, to Phyllis Joan, youngest daughter of the late Mr. William Bradford and Mrs. Bradford, of Merivale, Surbiton, Surrey.

BIRTHS.

MOFFATT.—At Shuna, Manor Way, Purley, Surrey, on Dec. 18, to May, wife of Flt. Lt. A. M'R. Moffatt, R.A.F.—a daughter.

STEWART.—On Dec. 26, at a nursing home, to Sylvia Gordon, wife of W. G. Stewart (late R.F.C.)—a daughter.

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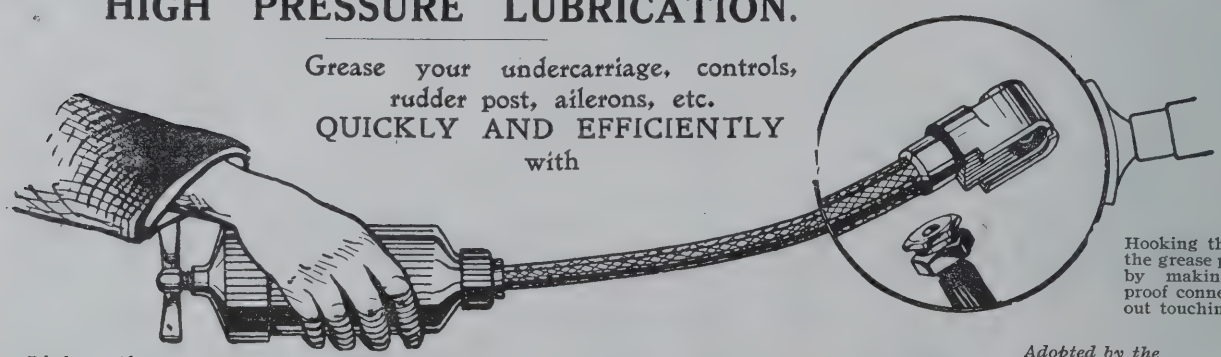
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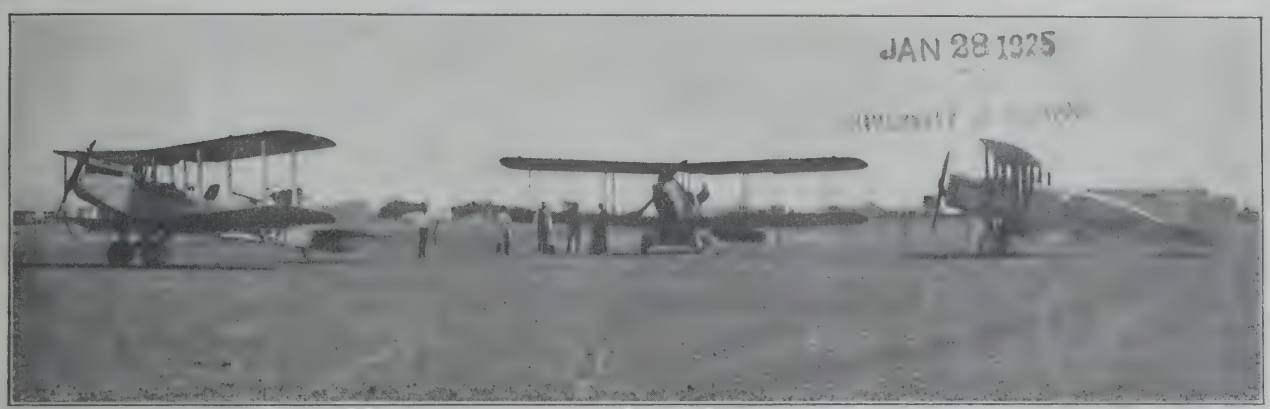
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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXVIII. No. 2. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

ADVANCE AUSTRALIA.



IN THE ANTIPODES:—Three De Havilland aircraft belonging to the Queensland and Northern Territory Air Services, which operates a regular air line between Charleville and Cloncurry where it is known generally as the "Pride of the Central West," on Winton Aerodrome. The two machines on the left are D.H.9cs and the other machine is an old standard D.H.4, which has been completely rebuilt and fitted up for passenger carrying in the Quantas workshops at Longreach. The equipment is now being enlarged by the addition of some D.H.50as.

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ON THE OUTLOOK.—II.

The Yellow Alliance.

In the previous section of this article one stated the belief held in the American Services that their war with Japan will begin within five years. It is said that the British Admiralty places the beginning of that war within the next year. Probably three years is nearer the mark.

Before that time the Russians should be ready for the Red Army to begin its Westward march across Europe. And the great Russian leader should begin to display his powers this year or next.

The French Revolution began in 1789. Napoleon Bonaparte first came into the public eye in 1796—seven years later. The Russian Revolution begain in 1917. The Russian Napoleon should be showing himself by now as a young general doing good work in Turkestan or Georgia or Eastern Siberia.

Probably news of his victories have not yet reached us. At any rate it is worth while watching for him, for human nature being always the same, and all revolutions following the same course, the time factor remains fairly constant. And the size of Russia is balanced by quick communications such as railways, aeroplanes and wireless. Also it is well to remember that Russia is not so poverty-stricken as was France under the Directoire, and that men and not money are the raw material of war.

Meanwhile straws show which way the wind blows. Long ago in this paper one stated that there already exists an understanding between Imperial Japan and Bolshevik Russia. On or about Dec. 19 there was held in London a dinner of "The Central Union of Chinese Students in Great Britain and Ireland." Among those present, according to the daily press, were "The Japanese Ambassador, the Acting Chinese Minister, ... The Chinese Consul-General, the Japanese Consul-General and M. Rakovsky (Soviet Chargé d'Affaires),"—besides sundry well-meaning English men and women.

The combination of the Japanese Empire, the Chinese Republic and the Russian Oligarchy is significant. It indicates the feeling and the understanding between the peoples of the East, call them Japhetic, Mongoloid or what you will, and it indicates the solidarity of the Yellow Race.

An Impossible Alliance.

Such an alliance is at least as natural as was the co-operation of Imperial Britain with Republican France and America (not to mention the other nineteen Allies) in the War 1914-18. It is at any rate far more natural than the absurd idea of a League of Nations which still obsesses so many people who really should have sufficient intelligence to know that such a league is against all the processes of Nature.

The Marquess of Salisbury, for example, the son of one of our greatest Imperialists, at a meeting of the Westminster branch of the League of Nations Union, held on approximately the same date as this meeting of the Yellow peoples, held up the splendid ideal of creating a European public opinion in favour of mutual service, so that every country could be able to help every other country which is a member of the League.

This would of course be a laudable ideal if it were confined to creating European public opinion, or even a public opinion of the long-headed nations, call them Shemitic, Caucasian, or what you will. But when this precious League of Nations includes the square-head Japanese and Chinese and is prepared to include the square-head Russians, and deliberately excludes our blood relations, the long-head Germans, and while our own folk the Americans stand aloof from it then the whole thing merely becomes a farce and a waste of time and money.

Perhaps the wisest thing that the United States have done in World politics since the Armistice in 1918 has been to cut themselves adrift from European affairs. Doing so has enabled the intelligent people of the United States to view the general mess-up of European politics without prejudice.

Consequently the educated American has a much clearer outlook on the World's affairs than has the average European of any nation. The American outlook is only influenced by the Japanese menace. And that menace does not warp the American outlook, it merely concentrates it on what is in fact the World's danger point.

The American Outlook.

The American view of the outlook is very well indicated by certain official pronouncements of President Coolidge during the past few weeks. For example in his message to Congress on the Budget delivered on Dec. 2, the President as reported in Mr. Lester Gardner's paper *Aviation* said :—

> "To-day the outstanding weakness in the industrial situation as it affects national defence is the inadequacy of facilities to supply Air Service needs. The airplane industry in this country at the present time is dependent almost entirely upon Government business. To strengthen this industry is to strengthen our national defence.
>
> "For the Air Service of the Army and Navy, and the Air Mail Service, the estimates, including contract authorisations, amount to $38,945,000. This contemplates an expenditure with the industries of $18,287,000 for the procurement of airplanes, engines and accessories.
>
> "The remaining $38,945,000, however, does not include all that will be available for this service in 1926. Amounts contributing to the Air Service carried in other estimates, and usable war supplies, will make a total availability conservatively estimated at $65,000,000."

From this it may be seen that the United States are spending definitely £13,000,000 on aviation and it must be remembered that this does not include the pay and maintenance of the personnel of the Navy and Army Air Services, for these are carried in the ordinary Navy and Army Votes. This, compared with the Air Force Estimate of £14,511,000 which includes the pay and maintenance of personnel, shows how America is awakening to the importance of preparedness in the air for war with Japan.

An American friend writing on this Presidential announcement remarks succinctly "It has taken a long time to arouse a general realisation of the fact that you have got to be able to make aircraft before you can fly."

This of course was one of the points about which there has been so much argument in the past in this country. Only in our case what aroused the most trouble was the fact that Sir Hugh Trenchard realised that it was no good being able to build aircraft if you had nobody to keep them in flying order when built. That was why for two years a high percentage of the R.A.F.'s money was spent on building barracks and on training mechanics, instead of on buying new machines and pushing them into the air without machine-crews to keep them in flying trim.

A further indication of the American point of view was given when on Dec. 19 the President created an Oil Conservation Board to study the supply of oil. In his letters to the Secretaries of War, the Navy, the Interior and Commerce the President said :—

> "The development of aircraft indicates that our national defence must be supplemented, if not dominated, by aviation, and it is even probable that supremacy in the air may be determined by the possession of available petroleum and its products."

The Super-English American.

Taking it all round it may be seen that the Americans have no illusions at all about the Yellow Danger and that it is their intention to prepare against it in a thoroughly adequate way. But of course the curse of trying to work up anything like a campaign for preparedness in America is that the American is so damnably English and refuses to prepare against anything offensive until he has actually been hit.

There is perhaps the saving grace about the American that he is apt to run to extremes, being descended either from people with the pioneer instinct who left this country because this country was not big enough or good enough or active enough for them or from people who were kicked out of this country for this country's good. To that extent the American-born Englishman is apt to be a little more active in the mind than is the stay-at-home Englishman and so perhaps a higher percentage of Americans may be led to see the imminence of the Yellow Danger than the percentage of English who perceived the advent of the War 1914-18. And for that reason it

may be easier for the Service people, backed as they are by the intelligence of the President and served by a good solid Republican Cabinet certain of four years in office, to build up something like an adequate Air Force to defend America's West Coast against the first Japanese attacks.

When the War actually starts there will be no difficulty whatever in finding the money and the men for any air force which may be needed to reconquer the Philippines and the Dutch Islands, working from our base at Singapore and from the Australian base at Port Darwin, as well as to strike at the heart of Japan by way of the Aleutian and Kurile Islands and the Asiatic coast.

Of course there will be the usual profiteering scandals but the experiences of the Aircraft Production Board in 1917-18 may possibly prevent a recurrence of the gross stupidity and flagrant graft of that period.

Reciprocity.

On general lines it seems likely that the British Navy, for what it is worth, will do most of its warfare in the Pacific in support of the American Navy and Air Force and that the American Army will see most of its service in Europe in support of the troops of all the Nordic nations against the Russians. In this way we shall achieve something very like a proper understanding among the Nordic nations.

At the same time, the Latins, or to be more accurate, the Mediterranean peoples must not be forgotten. They do at any rate belong to the long-headed or Semitic race and are just as naturally opposed to the square-head Japhetic peoples as are the Nordic tribes.

In the last war the Mediterraneans had very little to do and what they did they did badly. It was the Northern Italians who did the good work in Italy and it was the Franks who did the good fighting in France. Any Italian fighting man will bear witness to the fact that the Southern Italian troops were useless or worse. And any Frenchman who ever had to go to the South of France during the War will recall how the people of Marseilles used to inquire casually from the Northern French "How is your war going in the North?"—as if the South had no part in it.

The Latin Americans.

But in this war in the Pacific it is necessary to reckon very considerably with the Mediterranean American, more commonly known as the Latin-American. The two nations which matter most in this affair are Chile and Mexico. And these two nations present a very interesting racial problem.

In Mexico, although the wealthier people claim to be Latin-Americans, the dominant blood throughout the country is what is commonly called Indian. Now the more advanced ethnologists of to-day will tell you that all American Indians, both North and South, present marked Mongoloid characteristics. The assumption is that one of the very earliest Japhetic waves, after sweeping across Asia with or in advance of the true Mongol peoples, crossed over Behring Straits into North America and spread down the coast, where different types of Indians were produced according to the climatic conditions in which they lived.

It has already been stated in this paper, and it is generally recognised in America, that the Japanese are working in conjunction with the Mexicans with a definite scheme for an attack on the South of the United States when the war begins. When one considers that the Japanese are a mixture of Mongol and Negrito (the Negrito being some kind of aboriginal nigger) and that the Mexican Indian is of very early Mongoloid descent one sees that such an alliance is perfectly natural—as natural in fact as is that curious sympathy or racial affinity which has always existed between the British Officer and the aristocratic Othmanli or Edomite Turk, who is the descendant of Jacob's brother Esau.

Thus it may be seen that Mexico can be reckoned as a racial enemy in the war. The Mexican himself need not be considered as a fighting force, but owing to the nature of the country Mexico is almost unconquerable and if the Japanese Navy can keep the American Navy out of the way for the first year or so of the war the Japanese can land troops in Mexico and with them can lay out and defend aerodromes from which air raids of considerable intensity can be made on any American city within approximately five hundred miles of the Mexican frontier. As such a range would include such cities as San Francisco and Los Angeles in California, Denver (Colorado), New Orleans, and all the cities of Texas, it may be seen that a Japanese occupation of Mexico would be distinctly unpleasant for the United States.

Incidentally one was informed recently that according to the Intelligence Service of a certain foreign nation there are already 300,000 trained Japanese in that part of Mexico which is known as Lower California. It may be assumed that these Japanese are there with the deliberate intention of holding the Mexican frontier while as many as possible of the three million Japanese in American California bolt for cover behind them at the outbreak of war.

Chile and the Strategy of the Pacific.

Chile on the other hand is an entirely different proposition. The Chilean is undoubtedly the best of all the Latin Americans. He lives under harder circumstances than does the Brazilian or the Argentino, in that he inhabits a barren and rocky sea coast. Also he is nearer to the South Pole and lives in a more temperate climate than does the Peruvian who lives on similar ground. In this way a hardier, more hard-working and more warlike type has been produced.

The Chilean Navy has always been the best of the South American Navies and the Chilean Air Force has within the last few years demonstrated itself to be the best of the South American flying services. Also the native-born Chileno is very much more of straight Mediterranean descent and is much less mixed with remotely Mongoloid Indian blood than is any other South American.

To these ethnological facts must be added a physical fact which is of immense importance to all countries in this coming World War. Chile practically controls the nitrate supplies of the World. And supplies of nitrates are essential to the manufacture of explosives.

During the War 1914-18 Germany, deprived of nitrate supplies from Chile, turned to her skilled chemists and produced nitrate from the nitrogen in the air. No doubt in course of time Japan, by the simple process of buying German chemists, will also be able to set up plant for the manufacture of nitrate. But at the beginning of the war it will apparently be as necessary for Japan to obtain nitrates from Chile as it will be for her to get petrol from the Dutch oil islands.

Even if Japan can herself do without Chilean nitrates it is obviously important that the nitrate supplies should be prevented from going from Chile to the United States and to Europe. Therefore evidently one of the first problems for the Japanese in the war, after having obtained temporarily the command of the Pacific, will be so to intimidate Chile that the nitrate supplies will go to Japan and will not go to Europe.

Anglo-Chilean Co-operation.

Now the Chileans are already perfectly well aware of this and it is essential that Chile herself should build up an air force which will be capable of preventing air attacks from Japanese aircraft carriers and shall be capable at the same time of convoying nitrate laden ships either up to Panama or down to the Straits of Magellan.

It will be remembered that the Chilean Army Air Force has been organised and trained by Major F. P. Scott, late R.F.C., and that the Chilean Naval Air Service, what there is of it, was put into very good shape by Lieut.-Colonel J. L. Travers, late R.N.A.S., who was unfortunately killed last year at Croydon. The Chilean Navy has always been strongly under British influence, as is shown by the names of its two chief battleships the *Almirante Cochrane* and the *Almirante O'Higgins*.

The Chilean Ambassador to London for many years has been Señor Don Edwards, a millionaire of English descent, who by reason of his wealth has been able to maintain the biggest of all the foreign embassies in London. Recently Don Edwards has returned to Chile where he is regarded as being the next President.

Thus it may be seen that Chile is very much open to any British concern which will have the enterprise to assist in organising and equipping the air force which is necessary to the defence of Chile against the Japanese.

In any case it is obvious that Chile must play a very important part in the struggle against Japan's attempt to transform the Pacific into a yellow lake.

(To be continued.)

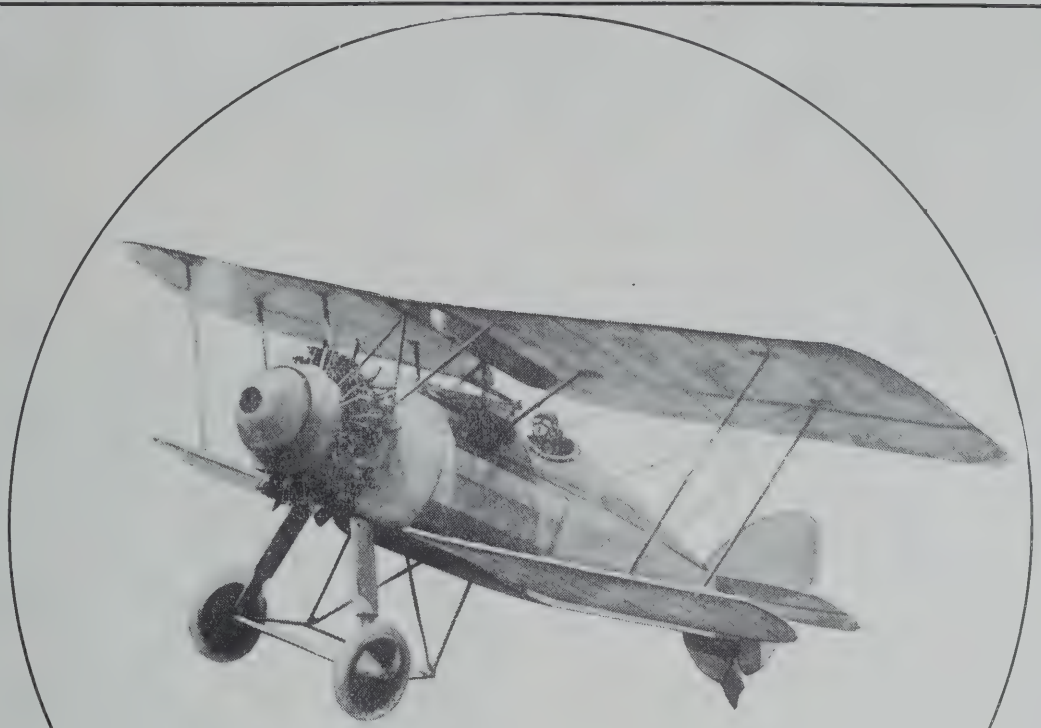
Sir Sefton Brancker's Tour.

Sir Sefton Brancker, who is engaged on a tour of preparatory inspection of the Air Route to the East, arrived at Allahabad from Delhi on Monday, Jan. 12. He had flown from Karachi to Delhi last week.

He is flying in a D.H.50 piloted by Mr. Alan J. Cobham. It has now been decided to continue the flight from Calcutta to Rangoon. It is expected that the return flight from Rangoon to London will be made in February.

Another Long French Flight.

It is reported that two French officers, Capt. Lemâitre and Lieut. Arrachart are to attempt to fly from Paris to Dakar, a distance of over 2,600 miles, without a stop. They will use a Bréguet XIX A.2 (400 h.p. Renault engine) which will be fitted with petrol tanks with a capacity of 460 gallons, sufficient for a flight of 25 hours' duration.



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THE ROYAL AIR FORCE.

The London Gazette.

Jan. 6.

General Duties Branch.—Flg. Off. H. G. Kirkman (Capt., Indian Army, retired) is granted hon. rank of Flt. Lt. (Dec. 18, 1924); Flg. Off. H. K. Waterfield is transferred to Reserve, Class C. (Dec. 31, 1924); Flg. Off. H. H. Sharp is placed on retired list on account of ill-health (Jan. 7); Flg. Off. J. G. Shackleton relinquishes his S.S. comn. on account of ill-health (Jan. 7).

Medical Branch.—Flt. Lt. J. Speak (Capt., Dental Surg., General List, Army) relinquishes his temp. comn. on resigning his comn. in the Army (Dec. 19, 1924).

Reserve of Air Force Officers.—R. P. Whyte is granted a comn. in Class A., General Duties Branch, as a Plt. Off. on probation (Jan. 6). The following Flg. Offs. are confirmed in rank (Dec. 24, 1924) :—E. F. Haselden, F. M. Kitto.

The following Flg. Offs. are transferred from Class A. to Class C. :—F. Neale (Jan. 4), E. E. Owen (Jan. 6).

Appointments.

Week ending Jan. 12.

General Duties Branch.—Air Marshal Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O., to H.Q., Air Defences of Great Britain, on appointment as Air Officer Commanding-in-Chief, 1/1.

Group Captains P. F. M. Fellowes, D.S.O., to Royal Airship Works, Cardington, for duty as Director of Airship Development, 1/12. L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., to Air Ministry on appointment as Deputy Director of Training, 1/1.

Wing Commanders P. C. Maltby, D.S.O., A.F.C., to No. 1 Wing H.Q., Farnborough, instead of to Station H.Q., Farnborough, 5/1. R. F. S. Morton, to No. 1 F.T.S., Netheravon, pending taking over command, 1/1. T. R. Cave-Browne-Cave, C.B.E., to Royal Airship Works, Cardington, for technical duties, 1/12.

Squadron Leaders R. B. B. Colmore, O.B.E., to Royal Airship Works, Cardington, 1/12. F. Sowrey, D.S.O., M.C., A.F.C., to No. 1 School of T.T. (Boys), Halton, 2/1. D. Iron, O.B.E., to Air Ministry, 12/1. J. R. Howett, to No. 7. Sqdn., Bircham Newton, 6/1. C. A. Ridley, D.S.O. M.C., to No. 2 F.T.S., Digby, 6/1.

Flight Lieutenants R. S. Rooth, A.F.C., F. M. Rope, H. C. Irwin, A.F.C., and S. Nixon, O.B.E., to Royal Airship Works, Cardington, 1/12. D. S. Don, to No. 17 Sqdn., Hawkinge, 15/1. R. W. Chappell, M.C., to R.A.F. Depot, 15/1. C. W. Mackey, and A. Latimer, to R.A.F. Depot on transfer to Home Estab., 18/12. H. A. Smith, M.C., to R.A.F. Depot (Non-effective Pool), 1/1. C. B. Dick-Cleland, to School of Naval Co-operation, Lee-on-Solent, 24/12. J. F. T. Barrett, D.F.C., to Aeroplane and Arm. Exper. Estab., No. 15 Sqdn., Martlesham Heath, 12/1. L. W. Jarvis, to No. 55 Sqdn., Iraq, 30/12. E. L. Ardley, to H.Q., India, 22/2. H. M. Moody, M.C., to No. 1 Wing H.Q., India, 1/2. C. W. Busk, M.C., to No. 60 Sqdn., India, 19/1. J. W. Baker, M.C., to No. 60 Sqdn., India, 21/1.

Flying Officers A. F. James, to No. 20 Sqdn., India, 31/1. E. F. Colam, to No. 27 Sqdn., India, 22/5. G. S. Brown, to No. 29 Sqdn., Duxford, 15/1. (Hon. Flt. Lt.) K. M. Murray, to No. 28 Sqdn., India, 15/4. L. W. Lane, M.C., to No. 31 Sqdn., India, 11/6. S. H. G. Trower, to No. 41 Sqdn., Northolt, 15/1. (Hon. Flt. Lt.) A. R. Prendergast, to No. 5 Sqdn., India, 30/12. I. N. C. Clarke, D.S.C., to No. 6 Sqdn., Iraq, 30/12. F. J. Islip, to R.A.F. Depot on transfer to Home Estab., 13/12. H. D. Wardle, to No. 4 F.T.S., Egypt, 9/12. H. A. Anson, to H.Q., Iraq., 21/11. T. Rose, D.F.C., to No. 29 Sqdn., Duxford, 12/1. F. W. van Blommestein, to R.A.F. Depot, 7/1. H. R. Vaughan Fowler, to Aeroplane and Arm. Exper. Estab., No. 22 Sqdn., Martlesham Heath, 12/1. H. G. Cook, D.S.M., and H. J. Brown, to Royal Airship Works, Cardington, 1/12.

Pilot Officers W. C. Barnsley, to No. 12 Sqdn., Andover, on transfer to Home Estab., 13/1. J. A. Mollison, to Aircraft Depot, India, 30/12. L. R. Shaw, and R. F. de R. Read, to No. 20 Sqdn., India, 30/12. R. E. Slacke, to No. 31 Sqdn., India, 30/12. A. E. Paish, to No. 5 Sqdn., India, 30/12.

Medical Branch.—Wing Commander H. A. Treadgold, M.D., B.A., to Central Medical Board, Hampstead, for duty as Medical Officer, 3/1. Squadron Leader P. M. Keane, D.P.H., to R.A.F. Depot on transfer to Home Estab., 29/12. Flight Lieutenant (Dental) N. H. Medhurst, to H.Q., Iraq., 9/12. Flying Officers W. B. Stott, to R.A.F. Depot on transfer to Home Estab., 21/12. R. S. MacLatchy, to Palestine General Hospital, 10/12.

Stores Branch.—Flight Lieutenants R. V. J. S. Hogan, to H.Q., India, 30/12. A. G. Knight, M.B.E., to Aircraft Depot, India, 3/4. Flying Officers E. W. Husband, to Aircraft Depot, India, 11/6. F. W. Todd, to No. 2 Wing H.Q., India, 10/3. N. W. Law, to Aircraft Park, India, 30/12.

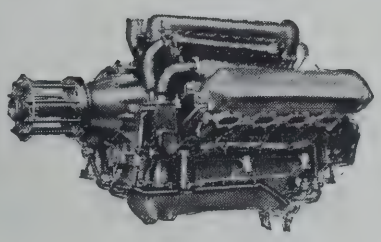
Accountant Branch.—Flying Officers J. F. R. Eales-White, to No. 14 Sqdn., Palestine, 12/12. W. E. V. Richards, to H.Q., Malta, 12/12.



Air Marshal Sir John Salmond with two officers of his Command.



DEFENCE.—Air Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., A.O.C.-in-Chief the Air Defences of Great Britain, inspecting a Gloucestershire Grebe II (Armstrong-Siddeley Jaguar) at Duxford on the occasion of his taking over this Command.



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Pilot Officers C. E. Aston, to R.A.F. Base, Calshot, 23/12. H. J. Titherington, to No. 5 F.T.S., Sealand, 23/12. K. E. M. Holmes, to No. 19 Sqdn., Duxford, 23/12. J. McL. Murray, to No. 24 Sqdn., Kenley, 23/12. G. F. Goatcher, to No. 17 Sqdn., Hawkinge, 23/12. C. Lorimer, to Arm. and Gunnery School, Eastchurch, 23/12. E. Smith, to No. 1 School of T.T. (Boys), Halton, 23/12.

Chaplains' Branch.—The Revd. A. McHardy, M.C., M.A., to H.Q., Iraq, 5/11.

The R.A.F. Cadet College.

The following flight cadets have successfully completed their course of training at the R.A.F. (Cadet) College. The names are arranged in alphabetical order :—

Addams, J. R., Allinson, N. S., Bandon, The Earl of, Beamish, G. R. (Winner of the Sword of Honour), Beardsworth, G. B., Campbell, J. H. McN., Cocks, A. H. W. J. (Winner of the Abdy Gerrard Fellowes Memorial Prize), Cox, G. F. G., Ford, R. J. A., Franks, J. G., Hardy, S. H., Harris, S. H. V. (Winner of the R.M. Groves Memorial Prize), Hayes, G. W., Hayes, M. E. de L., Montgomery, A. H., Scott, I. M., Terry, P. McK.

The Fleet Air Arm.

The *Times* of Jan. 1 states :—

The naval ratings and marines who are to replace certain of the R.A.F. *personnel* hitherto employed in aircraft carriers are ordered to be drafted gradually to units of the Fleet Air Arm in these vessels. The airmen thus rendered surplus will be disembarked at the nearest R.A.F. base at each stage, as arranged between the commanding officer of the carrier and the R.A.F. officer commanding the base concerned. The men for each flight or unit will be detailed by the commanding officer of the carrier from the total numbers borne on the ship's books, replacements in each flight or unit being made gradually as additional ratings are drafted to the ship.

The *Times* of Jan. 10 states :—

Capt. Ralph Leatham, who has been appointed for temporary duty in the Naval Air Section of the Naval Staff, has just been promoted, and his place as executive officer of the *Curacoa*, flagship of the Second Cruiser Squadron, is being taken by Cmdr. R. B. Lane, who has just completed two years as commander of the Mining Department of the *Vernon* Torpedo School. Capt. Leatham was formerly Fleet Torpedo Officer in the Mediterranean, and in 1918-21 was on the staff of the Torpedoes and Mining Department at the Admiralty. He served afloat during the war as torpedo officer of the *Carnarvon* and the *Renown*, being present in the former at the battle of the Falklands. The officers already serving in the Naval Air Section are Capt. T. F. P. Calvert, D.S.O., Cmdr. E. T. R. Chambers, A.F.C., and Paymaster Lieut.-Cmdr. H. Rogers, O.B.E.

Commander M. L. Clarke, D.S.C., late of the Training and Staff Duties Division at the Admiralty, has been appointed to the aircraft-carrier *Argus*, of the Atlantic Fleet, of which Commander D. M. T. Bedford has been executive officer for the past two years. The *Argus* is at present under repair at Portsmouth Dockyard, where she will be finished on Jan. 17.

Another change in the Fleet air arm is due to take place in the *Eagle*, attached to the Mediterranean Fleet, in which Engineer-Commander A. E. Shillcock, who has been in charge of the machinery of the ship during the past three years, is being succeeded by Engineer-Commander R. D. Cox, until recently in charge of the Torpedo Depôt at Rosyth.

Singapore.

The *Daily Express* Air correspondent, writing on Jan. 12, states :—

The establishment of a large and important air station at Singapore is, I understand, to come under consideration in connection with the naval base there.

At a later stage of the development of the Imperial airship route, which is ultimately to be extended to Australia when the first stage, between England and India, has become firmly established, an air station at Singapore would be of great value commercially.

[One may add that the aircraft carrier *Pegasus* has been at Singapore for some months and that her Fairey III D. seaplanes (Napier engines) have done a large amount of survey work over the surrounding country.—C. G. G.]

Rugby Football.

R.A.F. v. Guy's Hospital.—The R.A.F. played the first game of their season at Honor Oak Park on Jan. 7, when they beat Guy's Hospital by two placed goals, a dropped goal and a penalty goal (17 points) to a placed goal and a try (8 points).

The rumour that the Hospital mix plaster-of-Paris with their turf was belied by the fact that the Air Force kicked and handled very much better in the thick mud than the Guy's men did.

Guy's opened the scoring after having slightly the better of a very fierce half-hour, but from that point the R.A.F. forwards began to find their feet and Sq. Ldr. Russell the ball. Well backed-up by his stand-off half they started the three-quarter line again and again and by half-time had the Hospital defence stretched to its uttermost limits, and Cpl. Wale had kicked a penalty goal.

The R.A.F. showed even better form in the second half, the forwards, led by Flt. Lt. Chick, putting in some loose rushes which in that mud were not far short of marvellous. In addition to Flt. Lt. Chick, Flg. Off. Rose and Plt. Off. G. R. Beamish were particularly good both in the scrum and in the loose.

Shortly after the restart Cpl. Wale, who was on the left wing, dropped a goal. Later in the game he tried to repeat the performance when he might possibly have scored a try by using his remarkable speed along the touch-line. The forwards took the game in hand after this and their hustler tactics gave the three-quarters a chance of sending Flt. Lt. Scott, a hard-working right-wing, who played for the Service in 1920, over near the corner. Cpl. Wale converted from a difficult angle. Cpl. Wale further distinguished himself by scoring a try and kicking a fourth goal after a last desperate rally by the home team.

The whole three-quarter line played a good game. Their handling of a deplorable ball was excellent and there was not one forward pass. There were one or two bad passes given, not wild, but too low, which was probably due to the state of the ball. The full-back, AC. Bailey, who played instead of Sq. Ldr. Stephens, lost time and ground by not finding touch, but he has sure hands and a cool head. The tackling was the real Air Force stuff, Sq. Ldr. Russell being particularly deadly.

The R.A.F. team were :—AC. Bailey, back; Cpl. J. M. Wale, Flg. Off. P. J. Chambers, Flt. Lt. O. C. Bryson, and Flt. Lt. P. J. Scott, three-quarter backs; Plt. Off. J. W. Colquhoun, and Sq. Ldr. J. C. Russell (captain), half-backs; Flg. Off. F. W. Sinclair, Flg. Off. T. Rose, Flt. Lt. J. S. Chick, Flg. Off. C. D. Adams, Plt. Off. F. V. Beamish, Plt. Off. G. R. Beamish, Cpl. S. Johnson, and Cpl. F. Grose, forwards.

The War in the Hedjaz.

The *Times* correspondent, writing from Cairo on Jan. 5, states :—Official information has been received from Jeddah to the effect that a Wahabi reconnaissance from Mecca yesterday reached the outer fortifications of Jeddah, but was repulsed without loss to the Hedjazi forces.

The following note is taken from the *Morning Post* of Jan. 6 :—

A well-informed correspondent writes :

Such scanty news as filters through from the Hedjaz to London indicates that the situation there has in no way improved, and that unless the British Government are prepared to modify their present policy, and to initiate active measures to promote peace, hostilities are likely to recommence, to the grave detriment of British and Moslem interests.

"King" Ali's aeroplanes (without his orders or even knowledge—the Syrian soldiery are playing the same game in Jeddah as they did with Faisal), recently dropped six harmless bombs between Jeddah and Mecca, and matters were not improved by the appearance in the Jeddah paper the same day of a bellicose proclamation (which had apparently been broadcasted by aeroplane) informing the Meccans that, owing to the presence of the enemy, they were about to be bombed, and exhorting them to behave like heroes!

Ibn Saud can scarcely fail to take up the challenge, and an end has apparently been put to all hope of peace negotiations by these acts of suicidal folly on the part of Ali and his headstrong and fatuous mercenaries.

There is unhappily a serious shortage of food in Mecca, and this fact is likely to compel Ibn Saud against his will to attack Jeddah.

The view held in Jeddah is that the British Government, so far from being indifferent to the result of the present *impasse*, actually desires Ibn Saud to take over Jeddah and thus put an end to a régime which the British Government, though they created it, now realise to be a mistake.

[The Hedjazi Air Force which was to have been run by British officer-pilots, is now, apparently, run by Russians, and not by Syrians, as the *Post's* account would seem (probably unintentionally) to suggest. The story of how and why the British pilots did not reach Jeddah can only be told after verification of the rumours which are now current.—C. G. G.]



THE SWORD OF HONOUR.—Flight Cadet Under Officer G. R. Beamish who passed out of Cranwell on Dec. 16. In addition to winning the Sword of Honour, Mr. Beamish was Captain of the Cranwell Rugby team, and played cricket for the Cadet College. He is also playing for the R.A.F. Rugby team.

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A FAIREY SERIES III SEAPLANE (450 h.p. Napier engine) in flight over the Mediterranean near Malta.

THE FAIREY IIID SEAPLANE.

THE FAIREY SERIES III SEAPLANE is the standard general service seaplane in the Royal Air Force and is also employed by the Royal Australian Air Force, the Swedish and Portuguese Naval Air Services. It was on a machine of the Series III type, but fitted with larger wings, floats, and special fuel tanks that Admiral Gago Coutinho and Capt. Sacadura Cabral made their flight from Lisbon to St. Paul's Rocks in 1922. It was on a standard Series III that they completed their flight to South America after the loss of the special machine. In April and May of this year a Fairey Series III Seaplane fitted with a 360 h.p. Rolls-Royce engine and piloted by Wing Commander S. J. Goble, D.S.O., O.B.E., D.S.C., and F/O McIntyre, O.B.E., A.F.C., of the Royal Australian Air Force flew round the entire coastline of Australia, a distance of 8,568 miles in 90 flying hours, a flight which may be regarded as one of the most remarkable flights yet made by a Service machine on Service duties.

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The Special Reserve and Auxiliary Air Force.

The following information has been made available by the Air Ministry :—

The programme of Air defence sanctioned by the Government in 1923 provided on the one hand for the formation of a home defence force of 52 squadrons and, on the other, for ground defences consisting of guns, searchlights, etc. Responsibility for the provision of the ground defences rests with the Army, which works in close co-operation with the Air Force.

For various reasons the main part of the home defence air force must necessarily be established on a regular basis but it has been decided that part of the new organisation should consist of non-regular units.

These units will be divided into two classes, Special Reserve squadrons and Auxiliary Air Force squadrons, and detailed schemes are now well advanced for their formation on a well defined plan during the next four years. Together, these two groups will form a quarter of the total strength of the Home defence force, as at present authorised, seven being Special Reserve units and six being Auxiliary.

Reasons for the Decision.

The decision to introduce a substantial proportion of non-regular units into the Home Defence Force was based on two main principles. It was realised (a) that as conditions are at present the foundation of British aviation, consisting of a comparatively small number of highly trained Regular units, is very narrow and (b) that there is no reserve in civil aviation at present upon which to draw for rapid expansion on a national basis in case of necessity.

In these circumstances, it was, therefore, considered essential to broaden the basis of the Air Force by affording an opportunity to the people of the country to take an active share, within the limits possible, in the air defence of the country. In taking this decision it was felt that the new facilities which would be provided would stimulate local enthusiasm and initiative.

Moreover, it was considered that the existence of such national elements in the Royal Air Force would help to create throughout the country that wider knowledge and experience which is so essential in regard to a Service which must fill an increasingly important rôle in the defence of the Empire as time goes on.

Organisation, etc.

While the Special Reserve and Auxiliary squadrons will possess certain features in common, they will differ considerably in some respects.

Whereas the Auxiliary Air Force squadrons will be raised and administered by existing Territorial Associations, which are given new powers under the Auxiliary Air Force and Air Force Reserve Act, which was passed by Parliament last year, the Special Reserve squadrons will be raised, maintained and administered through the normal Service channels.

Again, the former group will be provided with a very small nucleus of regular personnel purely for instructional purposes, whilst the Special Reserve units will be established on a basis of approximately one-third regular to two-thirds Special Reserve personnel.

By creating these two classes of non-regular squadrons it is hoped to provide the widest possible field of recruitment. For instance, the Special Reserve squadrons may be expected to attract officers and men who are desirous of serving in a unit which comprises a strong element of regular personnel whilst the Auxiliary squadrons will be open to those who prefer to join a unit which is composed almost entirely of locally-raised recruits serving on a part-time basis.

By utilising the services of the Territorial Associations for recruiting and organising the Auxiliary Air Force squadrons it is felt that the new force will begin with the local support which has proved to be so valuable in raising other voluntary service units in the past.

For the Special Reserve recruiting will follow the normal procedure adopted for enlisting personnel for units of the regular Air Force but it is hoped that the goodwill, co-operation and active assistance of each local community, and, in particular, of the managements of engineering firms, will be accorded no less in establishing Special Reserve squadrons than in inaugurating the Auxiliary Air Force.

Location of Units.

The peace aerodromes will be situated in localities which are considered most suitable for the successful organisation and maintenance of the new squadrons and during the past year a careful reconnaissance has been carried out of the various districts throughout England and Scotland considered suitable for the location of both classes of squadrons. All the war-time aerodromes which offered possibilities have been examined and the field of selection has now been reduced to a relatively small number of alternatives which are being subjected to a final scrutiny. At present three aerodromes only have been definitely selected :—

Hendon, which will be the Headquarters for two Auxiliary and one Special Reserve squadrons.

Glasgow and Edinburgh.—One Auxiliary Air Force squadron will be stationed at Renfrew Aerodrome, Glasgow, and one at Turnhouse Aerodrome, Edinburgh.

These three aerodromes were in occupation during the war and Renfrew is at present the headquarters of the Scottish Civil Training School for officers of the Air Force Reserve. The complete list of selected stations will be made available as soon as a final decision has been made but it may be taken that the desirability of effecting the widest diffusion of knowledge of service aviation throughout the United Kingdom will be found to have been one of the governing factors in selecting the peace locations of the squadrons.

In addition to its home or local station, each squadron will have an allotted war station within the Defence system, and it will be affiliated with the formation of regular squadrons permanently established at such stations. During peace each squadron will proceed from time to time to its respective war station for periodic combined training with units of the Regular Air Force and ground defences, and on mobilisation in the event of war it will at once proceed to take up its position at its war station.

The organisation and the layout of these war stations has been devised to provide for the reception of the non-regular squadrons for peace training as well as for war purposes.

Types of Squadrons.

Both the Special Reserve and Auxiliary squadrons will be equipped as bombing squadrons. As is known, the Air units of the Home Defence Force consist of two types of squadrons, Fighting squadrons and Bombing squadrons, and the decision to equip the non-regular units for bombing purposes only is due to the fact that in the Fighting squadrons the very highest skill in flying, gunnery and co-operation with the ground defences is necessary in the pilots, while rapidity in getting a flight of aeroplanes into the air on receipt of an air raid warning is of such vital importance that pilots and mechanics need to be continually practised in the routine of such work. These requirements, therefore, make it necessary for all the personnel of the Fighting squadrons to be Regular Air Force.

Such a high standard of proficiency is not essential in the case of bombing squadrons and extreme rapidity is not of the same importance in launching the bombing attack. The bombing squadrons, therefore, lend themselves particularly to a scheme of manning with non-regular personnel. These squadrons are, however, divided into two classes, day bombers and night bombers and the non-regular squadrons will be equipped partly as day bombers and partly as night bombers.

Equipment.

Each squadron will be provided with the full scale of aircraft and other equipment allowed for a normal regular squadron. The day bombing squadrons will have single-engined aircraft and the night bombing units twin-engined machines. These will be housed at the squadron aerodrome which will be equipped with the necessary workshops and technical accommodation.

In addition, each aerodrome will be fitted with barrack accommodation for regular officers and men and the necessary messing facilities to meet the requirements of non-regular personnel.

Training.

The detailed regulations for both Special Reserve and Auxiliary Air Force squadrons will be published in the course of the next few weeks. These will contain full information regarding terms of engagement and conditions of service, but it can be stated now that they have been framed to provide the utmost elasticity regarding the training and attendance at units in order to make the conditions of service as easy to carry out as possible. A certain number of compulsory attendances for initial and periodic training will, of course, be essential, but care has been taken to ensure that the conditions of service shall be such as to cause the least possible interference with the civil occupation of both officers and men.

It is not expected that prolonged courses of instruction will be necessary for the initial training of airmen as it is confidently believed that the men who join, especially in the technical trades, will be of such a class and so highly skilled in the many allied trades of civil life that they will be able to carry out their R.A.F. duties efficiently with a minimum amount of special training. Need for such classes of engineering and other skilled artisans has been one of the main factors in deciding on the location of each unit.

As the nucleus of regular personnel will in the case of Auxiliary squadrons amount only to approximately 2 officers and 20 men (a number sufficient to carry out the day-to-day maintenance of the unit), it has been decided to provide a Headquarters with a drill hall in the neighbouring town nearest to the aerodrome.

The instructional equipment will consist of aircraft components, engines, armaments, etc. The town headquarters will therefore fulfil an important rôle in the training of the non-regular personnel.

In the case of Special Reserve squadrons, the training will be dealt with in another way. In this case the headquarters of the unit will be at the aerodrome and the regular personnel will carry out the necessary instruction there, utilising the aircraft with which the squadron is equipped, and, as each squadron will be located as near as possible to the main centre of recruitment, it is not expected that any difficulties will arise through inconvenience.

Designation of Squadrons.

A distinguishing series of numbers separate from those allotted to the regular squadrons has been chosen for the designation of squadrons of the Special Reserve and Auxiliary Air Force.

The Special Reserve units will be numbered from 500 onwards and the Auxiliary Air Force from 600 upwards.

In addition, the Auxiliary squadron will be given a Territorial designation, e.g., No. 600 City of London (Bombing) Squadron is the full title allotted to one of the Auxiliary Squadrons in London.

The Special Reserve squadrons will not carry a Territorial designation, but they will also have incorporated in their names an indication of the duty which the squadron will carry out, e.g., No. 500 (Bombing) Squadron.

Dates of Formation.

Although the necessary preparations for the formation of both classes of squadrons are well advanced and are being pressed on with all possible despatch, some months will probably elapse before recruiting for either type of squadron can begin, as it is particularly desired that enrolment should not be commenced until the aerodromes, technical accommodation and instructional facilities are ready.

It is hoped, however, that a start can be made with two or three of the squadrons in the spring of this year and the remainder, which it is intended to form in 1925, as may be found practicable.

The others will be formed in subsequent years, the development of the non-regular squadrons keeping in line with the establishment of the regular units of the home Defence Force.

Personnel and Strength of Units.

The total strength of the Special Reserve squadrons and the Auxiliary Air Force when formed will be approximately 360 officers and 2,400 airmen, but probably less than a third of this number will be required for the squadrons which are to form this year.

The strength of a squadron varies according to the type of duty and whether it is a Special Reserve or Auxiliary unit, e.g., a single-engined bombing squadron in the Special Reserve will have 26 officers and about 160 men and a twin-engined bombing squadron in the Auxiliary Air Force will have 30 officers and about 240 men.

The total numbers required may seem small, but it has to be remembered that the institution of these squadrons is an entirely new departure in regard to which experience has yet to be gained and the scheme must necessarily be initiated on a small scale. This small beginning by no means indicates an intention to restrict the scope of these schemes for there is every reason to expect that the experience gained will be of a nature to justify a wider development in the future, should circumstances require it.

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PERTH, W.A.

November 28, 1924.

The Business Manager,
De Havilland Aircraft Co. Ltd.,
Stag Lane Aerodrome,
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Middlesex,
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Dear Sir,

We wish to take this opportunity of expressing our great appreciation of the D.H.50 A. machines which you recently supplied to us.

The performance and efficiency of these machines is truly remarkable and the high-class workmanship and materials used leaves nothing to be desired.

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Yours faithfully,

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8715

ON MAKING THE MOST OF ACCIDENTS.

The recent serious accident to a D.H.34 at Croydon has drawn attention in the public Press to the question of official inquiries into the causes of such occurrences. The subject is well worthy of comment. Accidents, some trivial, some serious, and occasionally disastrous, do occur to aircraft and are likely long to continue to occur. That being the case, it is of the first importance that there should be the fullest possible inquiry into every serious accident, and that the results of such inquiries should be published openly and as promptly as possible.

Publication is desirable for two chief reasons. The first and most obvious is to provide aircraft designers and aircraft operating firms with the fullest possible information and to enable them to take precautions against repetition of similarly caused accidents in the future.

The second, and perhaps equally important, reason is that prompt publication of reliable information as to the cause of specific accidents—particularly those of a serious nature—is desirable in order to promote public confidence in the possibilities of aerial transportation.

In the case of the Croydon accident the average reader of the daily Press will have gathered that the accident was to a very large extent the result of "down-currents," "air-pockets," or other descriptions of atmospheric disturbance, perhaps complicated by an engine discharging black smoke. The general impression likely to be produced is that aeroplanes are now, and are always likely to be, subject to serious accidents in certain indefinite but disturbed atmospheric conditions, and as the atmosphere is beyond human control are therefore unlikely ever to become really safe. Every accident which—so far as the general public is concerned—remains unexplained serves to spread the belief that aircraft are essential fragile and delicate craft subject to disaster at any moment from causes of a more or less uncontrollable or mysterious nature.

An official report—preferably made as the result of a public inquiry—published while the accident is still in the public mind, may convey relatively little in the way of technical enlightenment to the public. But if it conveys clearly the fact that the primary cause of the accident was one susceptible of human control—as, for instance, a defect of design in the aeroplane, or of an error of judgment on the part of an individual—the public will be more easily persuaded that with increasing experience in the design and operation of aircraft similar accidents will become increasingly rare.

The Air Ministry has recently acquired powers to conduct inquiries into any aircraft accident which occurs in this country, and these powers are exercised in all but the most trivial cases. When circumstances warrant the procedure the Ministry may order a public inquiry, summon witnesses and take their evidence on oath. As soon as an accident is reported a preliminary and private inquiry is undertaken by specially experienced officials, who report to the Secretary of State, who then determines whether a formal public inquiry is necessary or desirable.

So far it has not been found necessary to resort to the formal public inquiry. The work of the Accidents Investigation Section at the Air Ministry has been carried out very effectively, and it is highly improbable that further inquiry would do more than confirm the conclusions at which the officers concerned have arrived. But these reports are not given proper publicity. They are presumably supplied to the individuals who are in any way concerned in the accidents—such as the makers and owners of the machine involved.

The report of the Aeronautical Research Committee for the year 1923/4, gave the gist of the conclusions reached after such inquiries into three or four serious accidents. One of these accidents involved the death of a very competent and experienced pilot, and attracted a considerable amount of public attention. The evidence provided by examination of the wreck was conclusive as to the cause of the accident, and this evidence and the inferences therefrom must have been available at the Air Ministry within a few days of the event.

Yet the essential facts which showed clearly how recurrence of a similar accident could be rendered practically impossible in the future were not available to the public for over 12 months, and even then were published in such a way that to many of those engaged in the Aircraft Industry the cause of this particular accident remains a mystery to this day.

Reports of this nature should be published as widely as possible and as promptly as possible. It can easily be understood that some aircraft manufacturers and/or owners will feel that publication of these reports might harm them by ascribing to them responsibility for defects of design, manufacture and operation leading up to the accident. But it is to the interest of the Industry as a whole that the public should be brought to believe that aircraft accidents can be prevented and are in course of being prevented. At present they believe many of them to be mysterious and unpreventable.—W. H. S.

AN OFFICIAL VALUATION OF THE TECHNICAL STAFF OF THE R.A.E.

The two advertisements which are reproduced below appeared during last month in a number of the engineering and technical journals, and probably in the daily press.

Wanted.—Assistant Engineer and technically trained B.Sc. with works and drawing-office experience. Starting salary 60s., plus Civil Service Bonus, or a total of 94s. 11d. a week, for Royal Aircraft Establishment, Farnborough.

Test Assistant required for Experimental Dept., Royal Aircraft Establishment, Farnborough. Technical training equal to a Degree in Natural Science or Engineering. Candidates must be willing and medically fit to fly as Observers. Starting salary 60s. a week plus bonus. Total 95s. a week.

For some considerable number of years now the official answer of the British Air Ministry to charges of having neglected to equip the Air Force with modern aircraft and of having prevented the private development of new experimental types of machine has been to point to the large sums of money which have been spent on official experiment and research and to hint that, although it is obviously necessary to be reticent as to details, it may reasonably be expected that the results of this work in the very near future will become visible in the shape of a sudden and marked advance in the quality of British aeroplanes and their equipment. These official apologia have usually been accompanied by fulsome compliments to the skill and resource and application of the technicians who are engaged on such work and by tributes to the importance of scientific work for the continued progress of aviation which so far as their form and matter go left little to be desired.

Yet, as has often been suggested in this paper, this country shows signs of a continued retrogression from the leading position in technical aeronautics which it held at the close of the war. Instead of leading the world we are to-day well in the background of aeronautical progress.

At first sight this state of affairs seems entirely incompatible with our very considerable expenditure on experimental work, and with the face value of the statements which have been made as to the official attitude concerning technical progress.

The two advertisements now in question seem, however, to throw a certain amount of light on the subject. It appears that the official estimate of the market value of a trained engineer who may properly be employed on scientific experimental work of supreme national importance is that he is worth about as much as a municipal street-cleaner, but appreciably less than a tram-driver.

It would seem, therefore, that when a high official of the Government or of the Air Ministry lays stress on the importance of scientific research, he has really at the back of his mind an idea that he is dealing with a necessary but unpleasant, almost indelicate, business—something on a par with sewer-cleansing or dust-removing—and that it is necessary to stress its importance lest the general public in its natural contempt for the class of creature which will undertake such work should fail to recognise the necessity for its being done at all.

And if that is the official attitude—as one suspects it must be—it is not surprising if the greater part of our expenditure on experiment is pure waste.

The mental equipment of the average politician, or even of many administrative Government officials, is such as to render this attitude a perfectly natural one. It is impossible to blame them as individuals for this state of affairs—their whole upbringing has been such as to keep them in the most utter and complete ignorance of everything outside of their special province—which incidentally is that of substituting words for deeds.

But there are certain people at the Air Ministry and at the R.A.E. who, by profession and training, must be able to realise how disgraceful is the state of affairs revealed by these advertisements and who must be in a position to make their influence felt in this matter.

If in fact such men, occupying relatively responsible positions and drawing at least a reasonable living wage, are willing to tolerate such sweating of their subordinates—who are junior members of their own profession—then they deserve to incur the contempt which the average politician and many Civil Servants feel for the technical man.—W. H. S.

VICKERS LIMITED

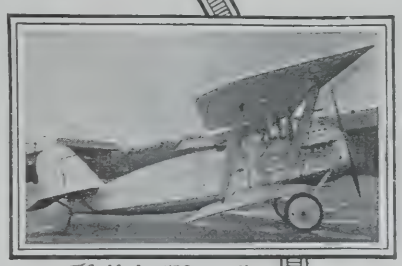


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METAL CONSTRUCTION IN FRANCE AND ENGLAND.

The 1924 Aero Show at Paris might almost be described as an exhibition of duralumin, for, apart from school and sporting types, a considerable majority of the French machines were built of that material. There is a tendency in this country to regard French metal construction with a good deal of scorn, and to allege that their methods—when they are not so crude as to be unworthy of notice—are far too costly to be of any real utility.

The specimens of duralumin construction shown at the 1922 exhibition certainly gave some grounds for this attitude. This year's display, however, shows a very marked improvement in the detail design of French metal-work, and in many cases it is obvious that the cost of production has been carefully considered. There can be little doubt at the present moment that France is much more nearly in a position to produce all-metal aircraft on a large scale than we are in England

There are still a good many people left in this country who are ready to argue that it is possible to build as good aeroplanes of timber and wire as of any of the all-metal type, and that therefore the extra expense on plant and tools for the production of the latter class of machine is not justified except on a purely experimental scale. There is however one consideration which is neglected in this argument.

The demand for spruce for aeroplanes during the late war was so great that the lumber industry of North America was scarcely able to meet it. To provide the quantities actually used the felling of timber had to be carried on with less than usual regard for the needs of the future, and the supplies even then had to be eked out by permitting the use of spruce of inferior quality, and by the widespread adoption of methods of artificial seasoning.

Had the war continued a year or two longer, the supply of spruce would have utterly failed to keep pace with the demand, and even with the greatly reduced output of aircraft to-day timber of a quality suitable for aircraft construction is increasingly difficult to obtain, and increasingly costly.

Any attempt now to produce aeroplanes mainly of spruce on the scale holding at the end of the last war would inevitably lead to a spruce famine within a very short time. When war on a large scale next breaks out timber-built aircraft—whatever their merits—will have to give place to metal machines, simply because timber of the necessary quality will not be available in adequate quantities.

To France in particular this aspect of the question must be particularly evident. Practically the whole of the world's aeroplane timber comes from Northern America. Her supplies of this material in war time would therefore depend not merely on the goodwill of the British Empire and of the United States, but also on the possibility of keeping the North Atlantic open to timber ships. France, never having possessed that faith in the potency of sea-power which is so strong in this country, and being a relatively weak naval Power, can scarcely be expected to rely upon North America for her aircraft supplies.

The alternatives therefore are that she must either develop methods of constructing aeroplanes from materials which she can herself produce in abundant quantities, or face the possibility in case of war of a failure of supplies of an essential material, and the consequent crippling of her air force.

Even at the end of the last war it was clearly obvious that the Allies would be faced with a spruce famine if the war continued very much longer. It was a recognition of this fact that mainly impelled our own Air Board to initiate those experiments in steel construction which have since been continued with such excellent technical results by a certain number of British aircraft constructors.

In this country the official view at the end of the war seems to have been that another war in the near future was so unlikely that we could afford to relegate the adoption of metal as a standard structural material to the relatively remote future, when the few firms who were willing to undertake the very arduous and expensive experimental work involved might be expected to have evolved methods of producing metal aircraft superior in every way to those of the older type.

In France no sign of faith in the long continuance of peace has ever been visible and the authorities concerned with the maintenance of the Air Services have apparently made it their business to put the French Aircraft Industry into a state to embark on war production at short notice. To this end they have encouraged all the French makers to construct metal aircraft without any particular regard to the suitability of the individual firm's equipment or aptitude for this class of work.

Some of the machines which have resulted from this policy have been weird and wonderful monstrosities. Others have displayed a degree of ingenuity and mechanical skill coupled with a disregard of cost, which has astonished British critics. But as has already been said, the past two years have produced a marked improvement. Regarded from the purely technical attitude French metal work does not represent so advanced a stage of development as does modern British steel construction. Nevertheless, most of it is perfectly practicable, particularly for production on a large scale.

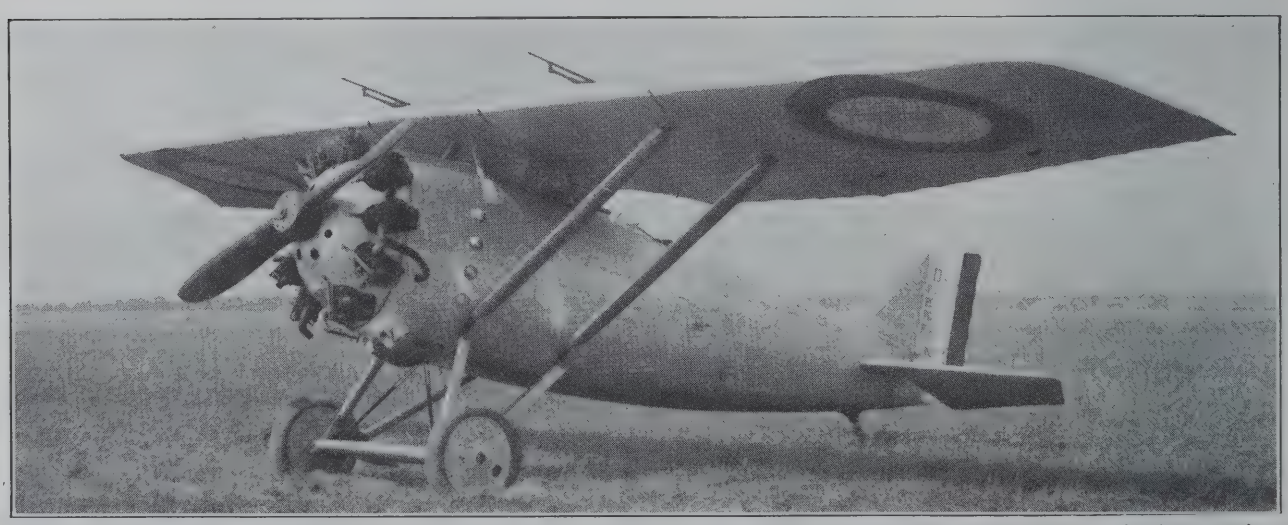
But the important fact is that practically every French aircraft factory has already some experience in metal construction, has at least a nucleus staff accustomed to the working of metals, and some of the special equipment, therefore they are in a position to start producing all-metal machines at very short notice. If war breaks out in the near future and spruce supplies are cut off, practically no French aircraft factory need be brought to a standstill and France from her own internal resources could produce usable metal aeroplanes in formidable quantities without serious delay.

In a similar emergency it is extremely doubtful if we could attain a similar result. Given time the British manufacturer might eventually produce better aeroplanes at a greater rate. But it is extremely likely that he would not be given time. The technical staffs of the relatively few firms who have a reasonably long experience of metal construction would not suffice both enormously to expand the output of their own works and to undertake organising and training duties in the works of the less experienced concerns.

Our steel manufacturers would be called upon to organise a vastly increased production of very special material at a time when their energies would be taxed by many other demands of an abnormal and important character.

The French aluminium industry, on the other hand, could probably regard the supply of aircraft material as its main, if not its only, duty in war time and concentrate its activities on the production of one or two standard alloys.

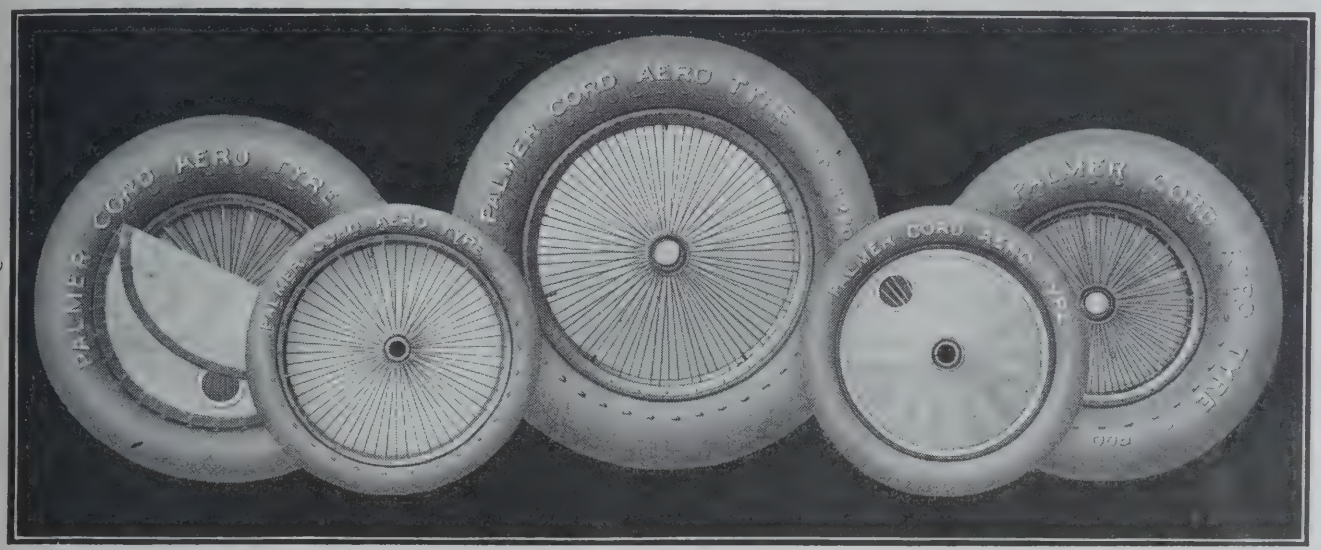
(To be continued.)



The Dewoitine D.9C.1, a near relative of the D.1C.1, shown at the recent Paris Salon, fitted with a Jupiter engine of 420 h.p. and built of duralumin. Note the two Darne guns over the wings, which are additional to the usual twin Vickers firing through the airscrew.

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.
†*Wheel No. 169 is fitted with Ball Bearings.*

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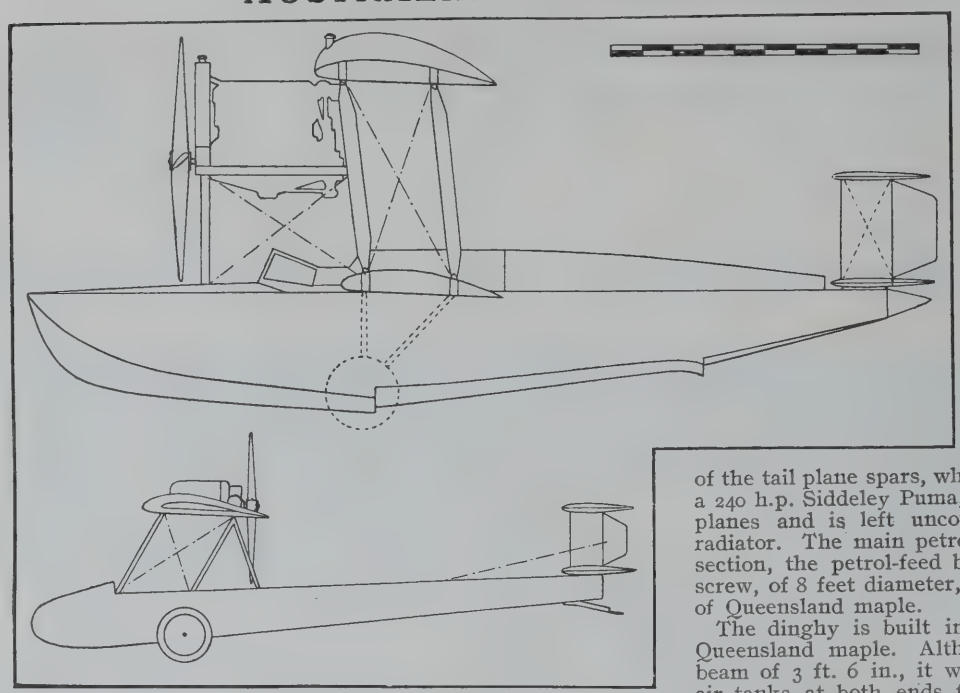
19, 121, 123, SHAFTESBURY AVENUE, LONDON, W.C.2.

Telegrams: "TYRICORD, WESTCENT, LONDON." Telephone: GERRARD 1214 (Five lines).

PARIS 31, Rue la Boétie.

SINK (240)

AUSTRALIAN EXPERIMENTAL AIRCRAFT.



Side elevations to the same scale of the Randwick Experimental Station's Widgeon flying-boat (top) and Warbler light aeroplane (bottom).

Some time during 1923 the Royal Australian Air Force established an experimental station at Randwick, near Sydney, and Sq. Ldr. L. J. Wackett, D.F.C., A.F.C., B.Sc., A.F.R.Ae.S., R.A.A.F., who will be remembered by many who served at Orfordness during the latter part of the War 1914-18, was appointed chief engineer and commanding officer. Randwick was established solely as an experimental station, and although aircraft are to be designed, built and tested up to the point of production, no repetition work will be carried out.

Since its formation Sq. Ldr. Wackett has designed two aeroplanes, the Widgeon, a four-seater boat seaplane fitted with the 240 h.p. Siddeley Puma engine, and the Warbler, a two-seater light aeroplane fitted with a 40 h.p. horizontally-opposed two-cylinder engine, also designed by Sq. Ldr. Wackett.

The Widgeon is a tractor flying-boat, the principal features of the machine being a wooden hull in which there is no plywood or glue, entire absence of tanks, fittings, pipes or bracing in the hull, interchangeable planes, struts and ailerons, all-metal wing ribs, a detachable undercarriage for land handling and a 10-foot dinghy which forms the cowling on the rear half of the boat hull.

The hull, which in shape resembles the hull of the Vickers Viking, is built up of two skins of $\frac{1}{8}$ in. Queensland maple with varnished fabric between the two layers, the whole being rivetted with copper rivets. The hull is built up on formers which are afterwards removed and spruce longerons are substituted. Two small open steps are afterwards built on.

The wings are built up on two spars of solid spruce. The wing and tail plane ribs are rolled from 30 gauge sheet brass, the leading-edge is rolled sheet brass, and the trailing-edge is piano wire. The tail unit is all metal, with the exception of the tail plane spars, which are of solid spruce. The engine, a 240 h.p. Siddeley Puma, is mounted in advance of the main planes and is left uncowled except for a tropical frontal radiator. The main petrol tanks are mounted on the centre section, the petrol-feed being entirely by gravity. The airscrew, of 8 feet diameter, is made up of two two-bladed units of Queensland maple.

The dinghy is built in the same manner as the hull, of Queensland maple. Although it is 10 feet long and has a beam of 3 ft. 6 in., it weighs only 70 lbs. It is fitted with air tanks at both ends to render it unsinkable and lockers for food, water, etc., are provided.

SPECIFICATION.

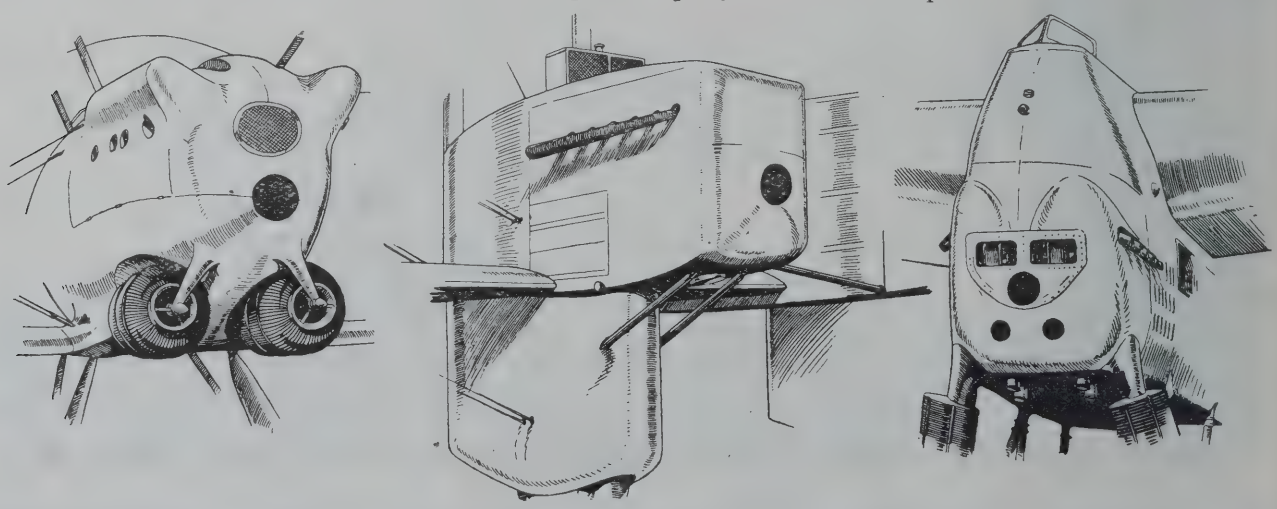
Span	38.5 ft.	Weight loaded	3,500 lb.
Length	29.5 ft.	Weight per sq. ft.	15 lb.
Height	13.5 ft.	Weight per h.p.	8 lb.
Chord	6.0 ft.	Hull weight	550 lb.
Gap	6.5 ft.	Speed, max.	90 m.p.h.
Hull beam	5.0 ft.	Speed, cruising	70 m.p.h.
Area of planes	475 ft.²	Speed, landing	50 m.p.h.

The Warbler has been designed and built to compete in the Australian Light Aeroplane Competition to be held at Richmond in November or December of this year. It is a parasol cantilever monoplane fitted with a 40 h.p. Wackett engine.

The fuselage is built up of spruce longerons with spruce struts and diagonal bracing strips. The front half of the fuselage is covered with Queensland maple, the rear half being fabric-covered. The wings are built up on two spruce box spars with maple ribs, the whole being fabric-covered. The wing is carried above the fuselage on four backwardly-inclined and two nearly-vertical steel tubes, as shown in the outline drawing. The engine, a flat twin, designed by Sq. Ldr. Wackett, which gives 40 h.p. for a weight of 88.5 lb., is mounted on the wing and drives a pusher airscrew. Tanks, etc., are mounted in front of the engine. The tail unit consists of a biplane tail and twin fins and rudders. The undercarriage consists of an axle and two wheels which are sprung direct to the two bottom longerons of the fuselage.

SPECIFICATION.

Span	40 ft.	Speed, landing	38 m.p.h.
Length	19.5 ft.	Speed, max. (with passenger)	82 m.p.h.
Height	7.5 ft.		
Speed, max.	100 m.p.h.		



NOSES SKETCHED AT PARIS.—Left, the Spad 81 C.1, centre, the Lioré and Olivier 12 (one nacelle only), and right, the Latecoére 16. The Spad has duralumin wings only. The others are all-metal machines.


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AEROPLANES
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A New German Passenger Machine.

The two photographs reproduced show the Dornier Komet III, which has just been completed and tested by the Dornier Metallbauten G.m.b.H. The machine is a development of the already well-known type, which it resembles in general construction, and, to some extent, in lay-out, and is to be used next year on a Frankfurt-Stuttgart-Zurich service, to be operated by the Wurtembergische Luftverkehrs A.G.

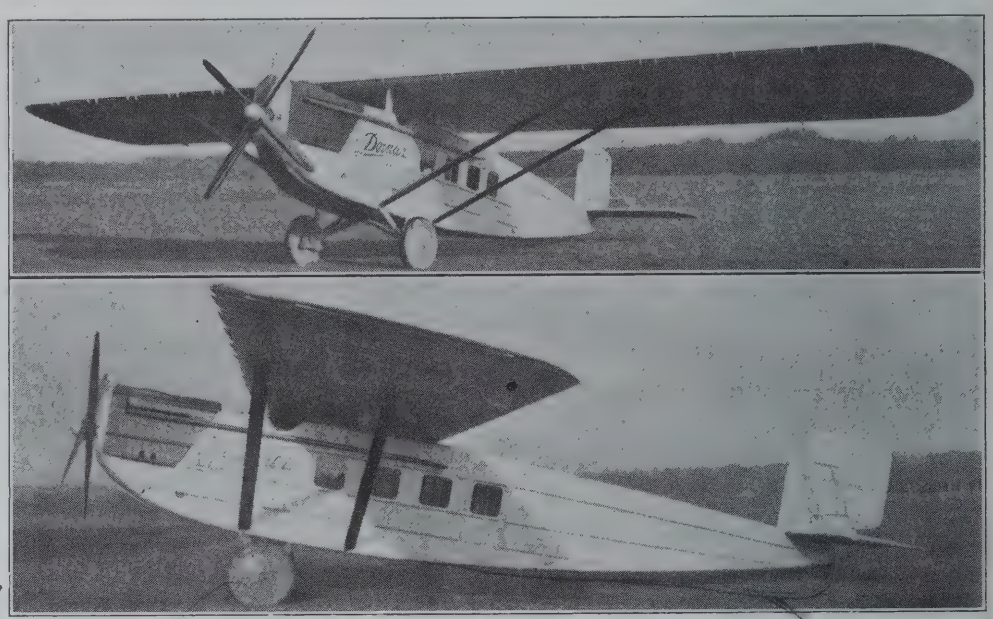
The machine is of the characteristic Dornier all-metal construction. It differs from the earlier Komet in that the wing is raised above the fuselage on four short centre-section struts, and that a short Vee-type undercarriage is used, instead of the axles being carried directly from the base of the body in wing-root-like projections. The wing tips are elliptical instead of being cut off square.

The engine is a Rolls-Royce Eagle of 360 h.p., driving a four-bladed airscrew.

Two side-by-side seats, with dual control, are arranged in an open cockpit, below the leading edge of the wing. Below and behind is a roomy passenger cabin, fitted with six couch-chairs for passengers, which allow the occupants to lie down, if they so desire. There is ample room for eight seats of the normal type, and the machine is quite able to carry this number. Racks for light luggage are fitted along the cabin and a separate compartment is provided for heavier baggage, mails, or the like. The cabin is electrically lighted and warmed, the windows are fitted with blinds, and the engine is silenced by long exhaust pipes.

SPECIFICATION.

Span ... 19.6 m. (64 ft. 3 in.)
Length 12.3 m. (40 ft.)
Wing area 62 m². (658 sq. ft.)
Weight empty 1,900 kg. (4,190 lbs.)
Normal loaded weight 3,100 kg. (6,840 lbs.)
Max. loaded weight 3,400 kg. (7,500 lbs.)
Engine ... Rolls-Royce Eagle 360 h.p.
Wing loading (3,100 kg.) 50 kg./m². (10.3 lbs./sq. ft.)
Power loading (3,100 kg.) 8.6 kg./h.p. (19 lbs./h.p.)
Max. speed (3,100 kg.) 180 km.h. (112 m.p.h.)
Cruising speed (3,100 kg.) 150 km.h. (93 m.p.h.)
Ceiling (3,100 kg.) ... 4,000 m. (13,000 ft.)



The Dornier Komet III (Rolls-Royce Eagle 360 h.p.).

An Air Line in Canada.

The aeroplane is now finding its way into all sorts of out-of-the-way places. The Canadian mining village of Rouyn, but for the aeroplane, would be isolated all the winter, when the snow and ice makes the roads impossible. Rouyn's population, however, is kept in touch with civilisation and receives deliveries of fresh meat and other provisions from the nearest town by "Laurentide Limousines," which are in fact the old Napier-engined Westlands which did such good service in Newfoundland a year or two ago.

These Limousines maintain a daily in-and-out service between Rouyn and Larder Lake. In addition to mail and freight they accommodate six passengers. For the winter, in place of the usual undercarriage, they are fitted with skids so that they are able to land on the ice and snow. The result is that practically the whole of the 100-mile journey is made over safe landing ground.

Confirming the Reliability of the Jupiter.

Some month or so ago it was recorded in these pages that a Bristol Jupiter engine, fitted to a freight-carrying aeroplane belonging to Imperial Airways Ltd. had been tested over a period of 150 hours' flying, under conditions as to loading and so forth, which called for 90 per cent. of the engine's full power during the whole period, during which, incidentally, the machine was handled by pilots possessing no previous experience of the Jupiter engine.

When, at the end of the test, the engine was removed for inspection, a second engine of the same make and type was at once installed in the machine, which was then put into service once more. Under similar conditions as to loading, this second engine has now completed 157 hours of flying without incident. During 90 hours of this period, careful observations were made of the fuel and oil consumption, which was found to average only 23.9 gallons of fuel and 7.6 pints of oil per hour.

Incidentally during one single day this engine was run for 14 hours on the London-Cologne route, during which time it called, and collected or delivered freight at, eight different aerodromes.

Wanted—an Aeroplane.

Mr. Shirley Solomon, the well-known South African aviator, would like to hear from any firm in this country which can offer him a useful touring machine at something like a reasonable price, say, approximately, £500 to £600. The price should be quoted c.i.f. Cape Town. The machine should be a two-seater and should not have a rotary engine.

For the benefit of the British Trade one would point out that there are plenty of quite useful machines in this category produced in the United States by fitting scout machines with OX Curtiss engines and turning them into two-seaters. For some curious reason nobody in this country seems to have produced an aeroplane in this class although there is in fact quite a reasonable market for such a machine in various parts of the world.

Mr. Solomon's address is :—Syfret's Trust Company Ltd., P.O. Box 206, 119, St. George's Street, Cape Town.

New Technical Literature.

U.S.A. National Advisory Committee for Aeronautics, Report No. 194.—Investigation of Slip-stream Velocity. By S. W. Crowley, Jnr.

Report No. 197.—A New Relation between the Induced Yawing Moment and the Rolling Moment of an Airfoil in Straight Motion. By M. M. Munk.

Report No. 198.—Astronomical Methods in Aerial Navigation. By K. Hilding Beij,

Technical Note No. 205.—The Logarithmic Polar Curve—its Theory and Application to the Predetermination of Airplane Performance. By Val Cronstedt.

Technical Note No. 206.—Structural Weight of Aircraft as Affected by the System of Design. By Chas. Ward Hall.

Technical Note No. 207.—The Simplifying Assumption Reducing the Strict Application of Classical Hydro-dynamics to Practical Aeronautical Computations. By M. M. Munk.

Technical Note No. 208.—Tests on Duralumin Columns for Aircraft Construction. By J. G. Lee.

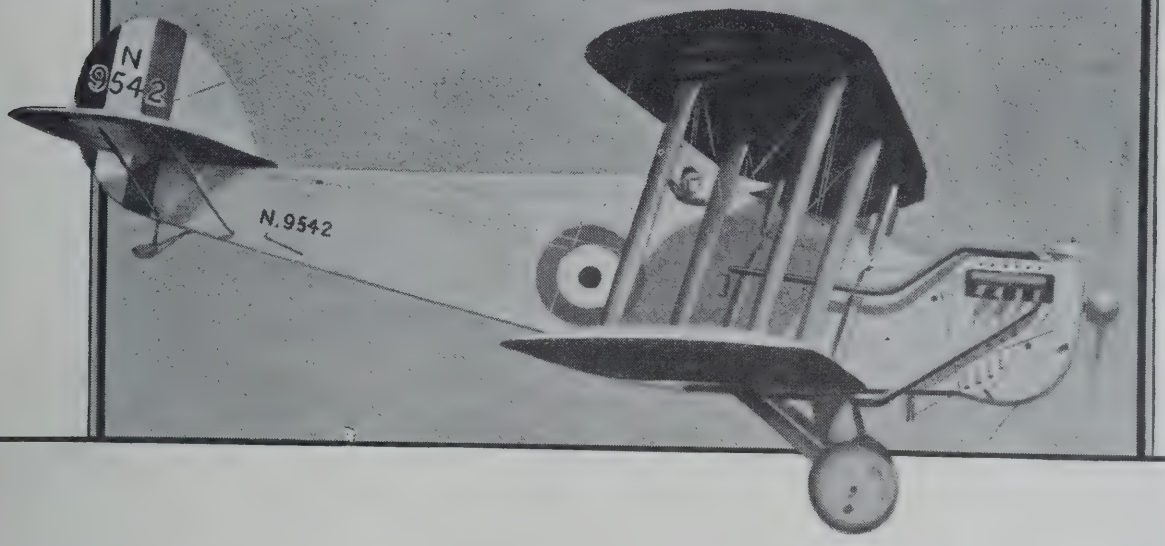
Round Japan in Nine Days.

Mr. Y. Goto, piloting a Kawanishi No. 6 seaplane (260 h.p. Maybach engine), belonging to the Osaka *Mainichi*, a well-known Japanese newspaper, left Osaka on July 23 and arrived back on July 31, having flown round Hondo, the southern island of Japan, a distance of 4,395 kilomes., in 33 hours 52 minutes' actual flying time. He carried with him one mechanic and a reporter of the *Mainichi* newspaper, as passengers.

The Aeroplane Album.

There are still a limited number of copies of the Aeroplane Album of British Aircraft available to those who have not yet acquired copies. This publication, which is produced in the finest possible photogravure, contains 46 pages of photographs of the most modern British aeroplanes. Copies may be had at 2s. 6d., post free.

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The Brough Residential Flying Club adjoins the aerodrome and is situated conveniently near the Blackburn Flying School.

The Company's aerodrome offers perfect landing facilities from all sides, and the River Humber is two miles wide opposite the slipways.

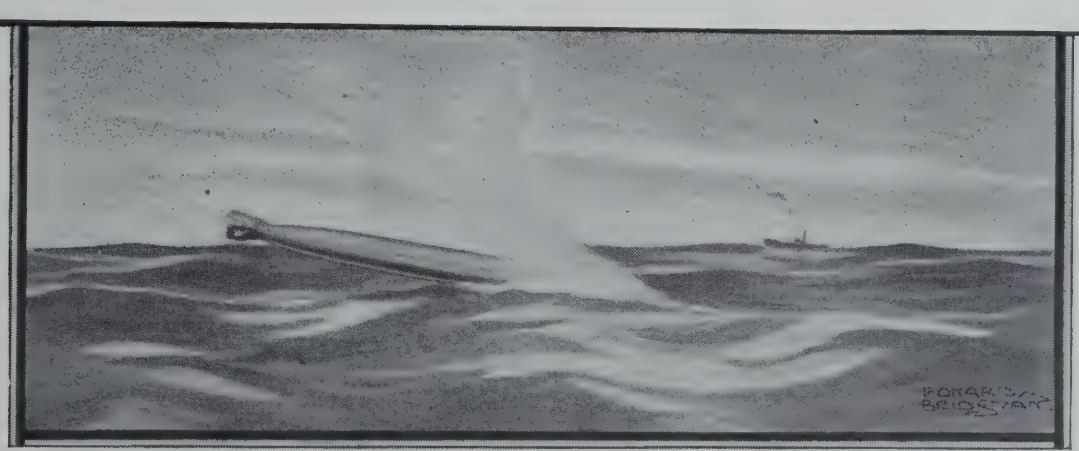
Instruction is given on both land and water alighting aircraft, advanced training on both Rolls and Napier engined aeroplanes.

Blackburn "Dart" dual control seaplanes are used for hydro landing.

Tuition in rigging, overhauling and maintenance is given.

Particulars of a special instruction course will be gladly sent on application to Capt. Norman Blackburn, North Sea Aerial and General Transport Co., Brough, Yorks.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 13; Tuesday, 10; Wednesday, 8; Thursday, 9; Friday, 11; Saturday 11; Sunday, 1.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 33, passengers 40, freight 8 tons.

AIR UNION:
Paris—London: Machines 16, passengers 20, freight 7 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 10.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 2, passengers 0.

Total number of trips by British machines: 33, carrying 40 passengers. Foreign machines: 30, carrying 30 passengers.

Comparative Figures:

For week ending Jan. 11:
Machines, 63; Passengers, 70; Crews, 79; Total personnel, 149.

Corresponding week, 1924:
Machines, 38; Passengers 51; Crews, 58; Total personnel, 109.

Corresponding week, 1923:
Machines, 34; Passengers, 63; Crews, 65; Total personnel, 128.

Corresponding week, 1922:
Machines, 31; Passengers, 51; Crews, 50; Total personnel, 101.

Corresponding week, 1921:
Machines, 27; Passengers, 30; Crews, 32; Total personnel, 62.

Croydon Notes.

The services have run with good regularity during the past week, with the exception of Sunday. On that day the fog was a very curious shallow fog-only about 20 feet thick. While it was so thick on the ground that visibility was only about five yards, the top of the control tower, the tops of the wireless masts and other high buildings were all projecting through the fog.

One machine only, a W8b with three passengers, piloted by Mr. Olley, got through. The pilot could not see the floor but could gauge the position from the protruding objects and put the machine safely down in the aerodrome. When it was on the ground it could not be found for some time owing to the denseness of the fog.

Mr. Perry has had a busy week at the Aircraft Disposal Company during the past week. On Monday he made two test flights with the Avro with the 120 h.p. Airdisco engine and he also made a flight on the Martinsyde A.D.C.1 (the Jaguar job). On Tuesday and Wednesday he made further tests with this machine, and on Thursday he made four flights on a Bristol Fighter. On Friday he had the Avro-Airdisco and the Martinsyde-A.D.C.1 out for more test flights.

The Inquest on the D.H.34

The resumed inquest on the eight people who were killed in the accident to the D.H.34 on Christmas Eve was continued at Croydon before Dr. Jackson, the Coroner, on Friday the 9th. Dr. Jackson this time sat with a jury and in addressing them remarked: "In order that you may appreciate the evidence which you are going to hear, I think I ought to tell you now that I am given to understand that certain complaints were made by Capt. Hinchliffe, the pilot who was flying the machine for some days before Dec. 24, complaints I understand that the engine was rough and that there was fluctuating lubricating oil pressure. Capt. Hinchliffe actually flew the machine in question back to the Croydon Aerodrome on the morning of the 24th.

In the evidence of Mr. T. H. Hewson, retired printers' overseer, witness stated that he heard the aeroplane making a great noise, and, looking up, saw it flying very low. The noise which was of a "rattly" kind, suddenly ceased altogether.

Mr. L. Pace, an aeroplane rigger, employed by the Imperial Airways, stated that he was standing at the gate of his house in the Brighton Road when he saw the machine coming over the brow of the hill. He testified to the fact that the engine appeared to him to be running in quite a normal manner. The machine pulled up and stalled and the engine was full on during the turn.

The Coroner: "What happened when she stalled?"

Witness: "A steep dive, or rather I might say a glide, developed, which finished in a vertical nose-dive."

In the course of cross-examination of this witness, Mr. Beyfus, representing Mrs. Stewart, said: "Is it the case that the one thing a pilot tries to avoid is stalling and the only way to get out of a stall is by nose-diving?"—"Yes, that is one of the ways." "Do you know any other?"—"I am not a pilot." "I suggest that in a big machine like the D.H.34 it is not possible to get out of a stall by falling less than 800 ft."

The Coroner here intervened.

Mr. Beyfus: "According to my advice, witness is giving evidence which is impossible." The Coroner: "What was the evidence which is impossible?" Mr. Beyfus: "That after the stall the pilot started on a glide which was vertical. (To witness) You have no suggestion to make as to what caused the machine to stall?"—"No, sir."

Capt. G. W. T. Glasson, C.A.T.O., Croydon Aerodrome, gave evidence to the effect that the take-off of the machine was sluggish.

Capt. F. L. Barnard, the well-known pilot, said he had been flying for about ten years, and had had considerable experience in handling all types of commercial aircraft. He witnessed the accident. According to the *Telegraph* he said:—

"I was taking the second machine out to Paris," he went on. "It was of perfectly similar type, and I had a slightly greater load. I was sitting on the top plane of my machine watching the final completion of the loading and waiting for the arrival of the Customs papers. My attention was attracted to the machine BBX by the noise of the engine. I looked round, and saw the machine about halfway across the aerodrome and still on the ground. It was travelling about thirty or forty miles an hour. The 'unstick' period was slightly longer than usual—that is the period it was running along the ground. For this reason I particularly listened to the engine to discover if any defect could be noted.

"The machine passed within twenty yards of me, and I am quite confident there was nothing whatever wrong with the engine. The machine did a left-hand turn immediately after crossing the fence, and proceeded in a south-westerly direction for about two minutes, not rapidly, but quite steadily. Then it turned round with a fairly wide sweep until it was once more facing the aerodrome. About a minute or so elapsed, and it then began to move quite slowly. Almost immediately it inclined slightly to starboard. At this time it was about 150 ft. or 200 ft. above the ridge of the hill upon which it subsequently crashed.

"It was obvious that if the machine continued to lose height at the same rate it would not reach the aerodrome. I particularly noticed that there was no smoke or any other indication of engine trouble. If the engine was 'missing,' one would naturally expect to see black smoke from the exhausts. The machine then put its left wing down and made a fairly rapid turn to the left. That, in my opinion, was an indication that it was the intention of the pilot to make a landing into the wind, which was still strong and gusty. When almost in the wind, and still on the turn, the machine made an evolution which could only be construed as a 'stall'—that is, she lost flying speed. The nose went down, the machine did the first half turn of a spin, and disappeared from my view behind trees or houses. It was then, I think, about 40 ft. from the ground, and nothing could have changed its position in relation to the ground from the time I last saw it until it struck."

Dealing with the weights of the machines, the witness said the one which he piloted and the one which crashed were of the same weight when fully loaded. He thought the full load was 7,200 lb. "I think," he added, "that I was within an ounce or so of the maximum load. We actually took off some chairs. I am sure I was within a pound or two of the maximum load."

The inquiry was adjourned until Wednesday.

The Air Pilot.

["The Air Pilot." Published by the Air Council. £1 12s. 6d.]

The above work was issued in November last, and must necessarily be in the hands of every pilot, both Service and civil. It consists of two parts, in which there are, altogether, five chapters and an appendix.

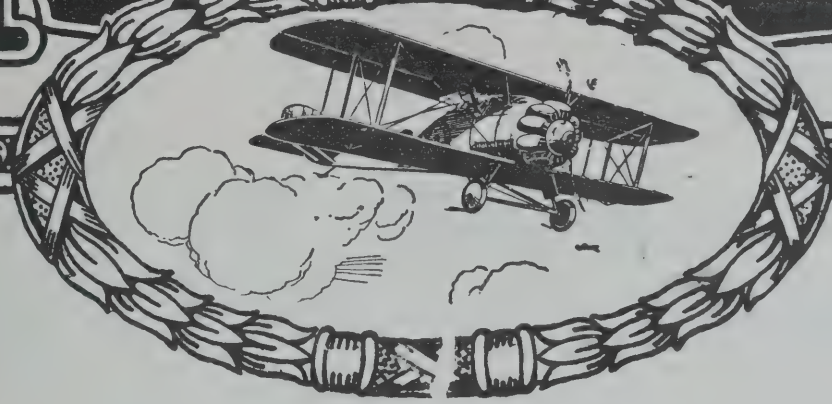
The first chapter deals with the regulation and administration of Civil Aviation, and the second chapter contains general information and instructions. Chapter III deals with the climate, and Chapter IV with pilotage directions.

The book is worth the money, if only for Chapter V, which gives a full description, and a map, of every aerodrome and the country around it, in Great Britain and Ireland.

Every question that is likely to arise in connection with civil flying is dealt with, and the above-mentioned list of

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

aerodromes must be of great value to both Service and civil pilots.

The only snag in the production is in the issue of the monthly supplements. On some of the pages of these it is stated quite clearly exactly as to where they belong in the book, but the clues to where others go would make any composer of cross-word puzzles turn green with envy.

One suggests that in future it should be clearly stated where every page is to go. One may be exceptionally stupid, but if the "list of French lighthouses" issued with the January Supplement, goes where one thinks it does, it either breaks up the list of English lighthouses, or gets into the next chapter on air stations. And there seems to be no other place for it.

The book is bound on the loose-leaf principle, and one suggests that when the next supplement is issued, longer screws for binding be issued with it.—G. D.

The Speed Record.

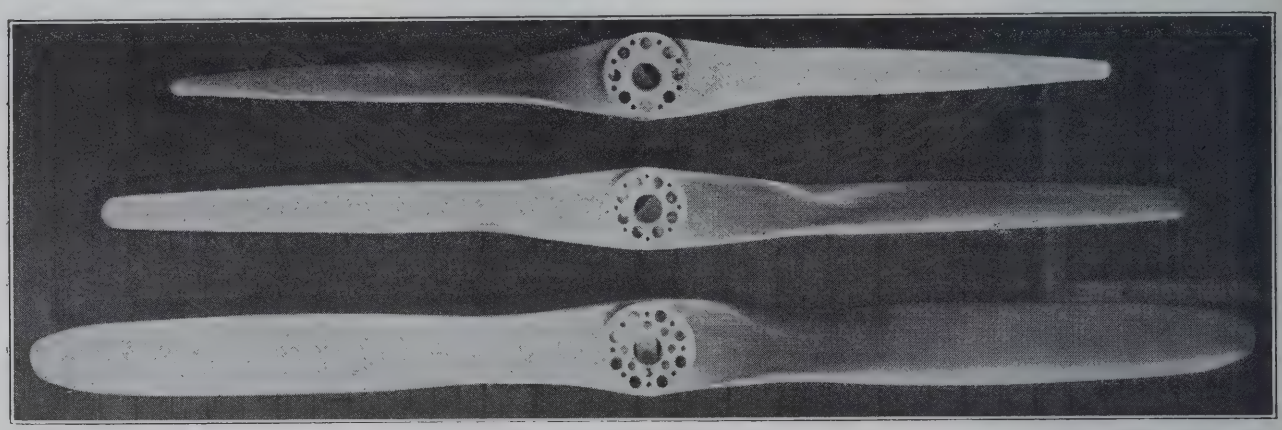
It is of interest to learn that in connection with the World's Speed Record of 278 m.p.h., accomplished by Adjudant Bonnet on the Ferbois monoplane, the fuel used on this flight was pure benzole, and the lubricating oil was Castrol.

The machine was not in its finally cleaned-up state. When it is it is expected that it will be still faster.

[Incidentally one would like to know considerably more about that benzole. Is there a difference between *benzole* and benzol as there is between *petrole* and petrol?

In the first place it is fairly well accepted that pure petrol spirit such as Shell or Pratt's, when specially refined for aero-engines, gives more revs. per minute than does benzol, which burns more slowly. *But*, the addition of a little benzol stops "pinking" and, in a car engine, gives a better pull on hills or under load.

On the other hand benzol makes a fine hard soot rather like emery dust, and if this soot gets past the piston-rings into the oil system it grinds away bearings in a remarkable way. One is of the opinion that the use of benzol is the chief reason why aero-engines need new piston-rings and valves and so forth so much more often than would seem to be required by the time they are in use.—C. G. G.]



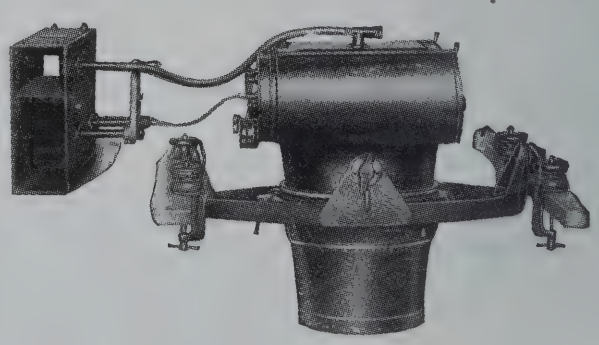
THREE OF A KIND.—Reed Airscrews for engines of the same horse-power (about 450) to run at different speeds. Above, a racing screw to do 2,500 r.p.m. Middle, a general service screw to run at 1,800 r.p.m. Below, a geared-down screw to run at 1,100 r.p.m.

Eastman Aero Camera

Model K1

for Topographical Work

The Eastman Aero Camera (Model K1) is entirely automatic in action. Driving power is provided by a wind motor containing a rotary paddle wheel, with a lever control, which also regulates intervals between exposures. Any number of exposures—size 9½ ins. x 7 1/16 ins. (18 x 24 cm.) —up to 100 can be made on one 75 ft. roll of Eastman Daylight Loading Film. The film is held flat by the constant suction caused by the Venturi tube. Shutter speeds can be varied at will from 1/90 to 1/310th of a second. Fitted with either 12 in. or 20 in. f4.5 lens.



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ADAPTABILITY

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From a 7-ton flying boat to a single seat fighter is the useful range for Wright "T" Engines. The procurement of engines must be planned long in advance of the construction of planes. Therefore, the adaptability of an engine for use in many types of planes is the most reliable safeguard for the purchaser.

Wright "T" Engines have been installed in 8 different types of planes. Two of these types are single seat land fighters used as racers; one is a single seat sea plane; one a twin engine long distance boat; four are combined land and sea planes usable for bombing, torpedo, observation, cross-country, and spotting purposes.

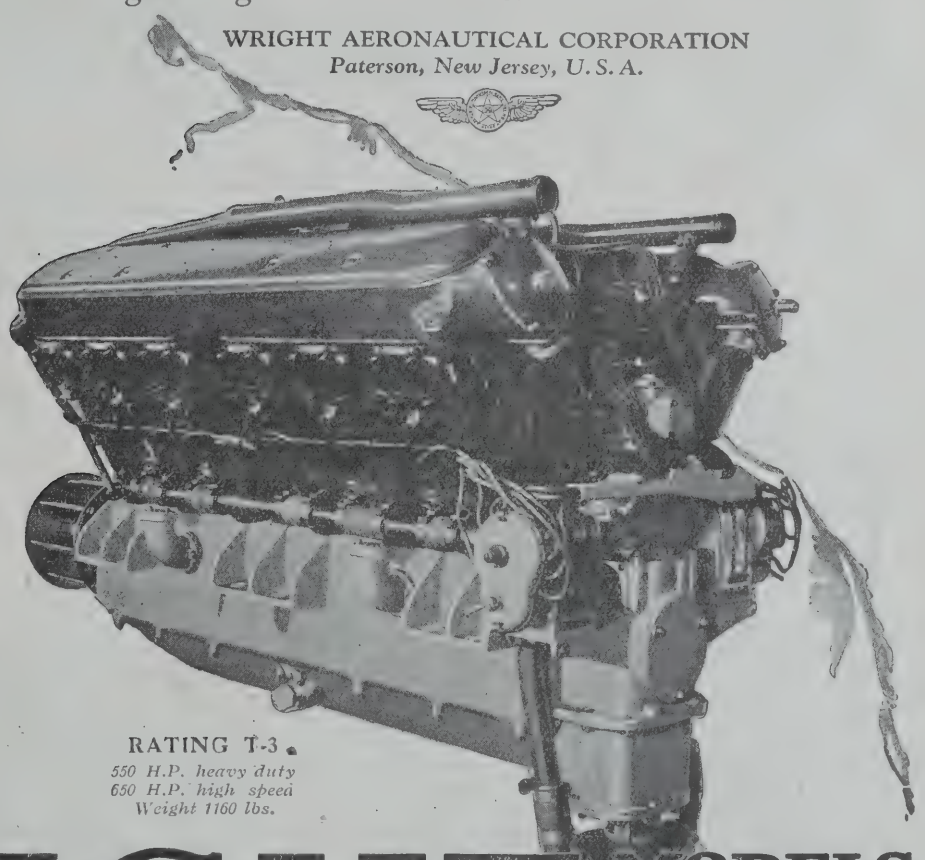
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The Batavia Flight.

It has been pointed out by the Comité Vliegtocht Nederland-Indie that Mr. Van der Hoop, who made such a fine flight recently from Amsterdam to Batavia, in the Dutch East Indies, is a civilian pilot employed in the service of the K.L.M., having left the Dutch Army some years ago.

An interesting fact about this flight is that it was performed on a commercial machine, a Fokker H-NACC (Rolls-Royce engine) in use during 1924 on the Amsterdam-London service, the only alterations made to it for the flight being an extra petrol tank and a second radiator.

At the same time it is only fair to argue that Mr. Van der Hoop learned to fly as a soldier and that his performance is evidence of the high state of efficiency of the Dutch Royal Flying Corps.

A Japanese Globe-Trotting Expedition.

The Japanese newspaper, *Asahi*, is organising a Tokyo-London flight for which it guarantees £30,000 towards the total cost. Two Japanese-built Bréguet XIX biplanes, fitted with 400 h.p. Lorraine-Diétrich engines, will be used.

The personnel of the flight will be one pilot employed by the *Asahi*, one military pilot, two mechanics and one reporter. It is hoped that the flight will begin on May 1, and that flying via Siberia, London will be reached on May 16.

It is interesting to note that the flight is to be made over Russian territory. The project confirms the rumoured entente between Russia and Japan.

The De Havilland Aircraft Company, Ltd.

In the absence of the Chairman, Mr. A. S. Butler, Mr. A. E. Turner presided over the Fourth Annual General Meeting of The de Havilland Aircraft Co. Ltd., held at the registered offices, Stag Lane Aerodrome, Edgware, on Monday, Dec. 22, 1924.

Mr. Turner, in moving the adoption of the accounts, expressed his pleasure at being able again to report a very satisfactory year's trading, which would allow, for the fourth year in succession, a dividend of 10 per cent. to be paid, after again transferring £5,000 to Reserve.

In dealing with the Company's activities during the past year, he referred to the various successes, including winning the King's Cup for the Air Race round Britain, a highly successful and entirely trouble-free flight round Australia, and a record-breaking flight from England to Africa in one day, achieved by the new D.H.50 four-passenger commercial aeroplane. He stated :—" The demonstrations thus given of the efficiency of this machine have resulted in orders being received from very widespread sources, including the only three Air Transport Companies operating in Australia, from Imperial Airways Ltd., from the Czecho-Slovakian Government and from Northern Air Lines Ltd. The possession of these machines will certainly promote a demand for spare parts, etc., from the companies operating them, and this demand will naturally benefit the Company. Further, there are at present at least two important negotiations for Air Lines under consideration in different parts of the world and should these mature, D.H.50 aeroplanes would almost certainly be used, with material benefit to this Company."

In explaining why he had dwelt at such length on the civil aviation side of the business, Mr. Turner continued :—" At the present time, more than half of our business is with the Air Ministry; the remainder comes largely from civil aviation in all parts of the world in which we have been at much pains to establish a connection, based on our reputation for the design of commercial aircraft. Although we hope that the Air Ministry business will get still larger, and we are doing our utmost to achieve this, we firmly believe that there is an immense field for development in the region of civil aviation, and this belief our past experience amply justifies. We are therefore devoting considerable time and energy to furthering this branch of our enterprise and we feel confident that future events will prove this policy well-founded."

He also reviewed the Company's activities in regard to sales of military machines, spare parts, etc., to the British Air Ministry, to the efforts which were being made still further to increase the sale of the Company's products in all parts of the world and to the highly-successful results obtained with the Aeroplane Hire Service and the Flying Training School.

In conclusion he invited the shareholders to subscribe for the further 25,000 £1 shares which were now being issued, pointing out that as this fresh capital was required for the extension of the premises and the provision of new plant and equipment, there was every indication that the excellent results hitherto obtained would be fully maintained.

The resolution to pay a dividend of 10 per cent. was unanimously agreed, and after the other business of re-appointing auditors, etc., had been dealt with, the meeting closed with a hearty vote of thanks to the Chairman for the very efficient manner in which he had conducted the business.

PERSONAL NOTICES.

FORTHCOMING MARRIAGE.

SHORT—CHURCHILL.—The engagement is announced between Mr. F. J. S. Short, R.A.F., son of the late Frederick Short, of Sunderland, and Mrs. Short, and Phyllis Ada, only child of Mr. and Mrs. J. E. Churchill, Thorndean, Swingfield, near Dover.

MARRIAGES.

CALLAWAY—TRIM.—On Jan. 7, at St. Mark's, Southampton, by Sq. Ldr. the Rev. M. H. Edwards, M.A., R.A.F., assisted by the Rev. C. C. Wilson, M.A., Sq. Ldr. William Bertram Callaway, R.A.F., younger son of R. G. Callaway, R.N. (Retd.), of Sydenham, London, and the late Mrs. Callaway, to Evelyn Winifred, younger daughter of Mr. and Mrs. J. F. Trim, of 32, Archer's Road, Southampton.

MAYES—FABIAN.—On Dec. 11, at New York, by licence, H. R. Mayes, late R.A.F., R.N.A.S., and Armoured Car Brigade, R.N., eldest son of H. A. Mayes, Councillor and Guardian of St. Pancras, to Irma Fabian, daughter of General Arkossy Fabian, of the Royal Hungarian Army, Budapest.

BIRTHS.

GAUNT.—On Jan. 9, at 27, Hawthorn Road, Ribbleton, Preston, to Mr. and Mrs. V. S. Gaunt—a daughter.

STRAFFORD.—On Dec. 29, to Edna, wife of Flt. Lt. S. C. Strafford, D.F.C., R.A.F., West House, Lee-on-Solent—a daughter.

WARING.—On Jan. 8, at 21, Rosehill Road, Wandsworth, to Jean, wife of Rupert Waring—a daughter.

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Edited by C. G. Grey

Vol. XXVIII. No. 3. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

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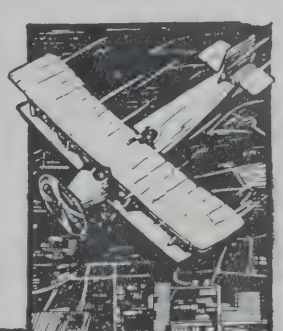


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ON THE OUTLOOK.—III.

In the two previous chapters of this discourse one has endeavoured to set forth the general outlook of World Politics and the relationship of air power and aircraft thereto. Most of what one said is already well known to regular readers of this paper, but it is always good to refresh one's memory by a review of the situation. And in making such a review new factors continually arise.

Also there are new readers to be considered. And there are regular readers whose interests may have been concentrated on other phases of aviation. For example, there are those who have been primarily concerned with technical matters and have only just awakened to the fact that the Science of War is a far greater science than Mechanics or Aerodynamics in that it includes Psychology and all the Humanities as well as the merely mechanical and mathematical sciences.

It is said that as an experiment a certain officer who was considered one of our best technicians was compelled some time ago to undergo a Staff course and that thereafter he expressed the opinion that technical work was mere child's play compared with staff work. A proper understanding of strategy and tactics would be of the greatest use to our technical experts in that they would thus learn the particular kind of work which will have to be done by the aircraft for whose design and production they are responsible. If such learning could be drummed into their heads we should waste less time and money on building perfectly useless types of obviously successful flying-machines and we should spend more on experimental aircraft which by way of many failures would lead to genuine progress in design and performance.

A Resumé.

For the benefit of such readers one may briefly re-state the general situation thus :—

Within the next few years, say three as a minimum and ten as a maximum, we shall be involved in a real World War.

This will not be a tribe-fight as was the War 1914-18 but a a genuine race-war. In it the long-headed nations (which include all the Nordic tribes of North-West and West Europe and North America and Australasia and South Africa and North-West India, and the Mediterraneans commonly and erroneously called Latins—of South Europe and North Africa and South America, and the Arab tribes of South-West Asia) will be pitted against the square-headed nations (which include the Russians, the Japanese, the Chinese—these chiefly as coolies—, the Turks, and certain tribes of what is commonly called Mongoloid origin in Central Europe—these including sections of the Czecho-Slovaks, Jugo-Slavs, East Prussians, and so forth, where square-heads and long-heads are mixed.

The War will probably start in the Pacific between Japan and America. Or it may begin by the Russian "Red Army" attacking Roumania or Poland.

In the first event our Fleet and Air Force must be ready to join the Americans, working from our base at Singapore.

In the second event our Army and Air Force, and the American Army, must be ready to go to the help of Germany and Austria, so as to keep the square-heads out of Western Europe.

Whichever way the war starts we shall ultimately find ourselves with our American compatriots committed to holding two lines of defence,—one across Europe, roughly from Dantzig to the Alps, and the other across the East Indies, from Singapore to North Australia.

There will of course be secondary fighting lines. For example, there will be the line along the Persian-Russian frontier and the line along the frontier of Iraq north of Mosul—both to protect the Persian and Iraqui oil supplies. And there will be the line across North-West India to prevent a Tartar advance into the Ganges Valley. And there will be the line from the Alps to the Adriatic to prevent the invasion of Northern Italy—that will be the affair of the French and Italians.

But the main wars will be a vast land war of mechanical traction, mounted infantry and aircraft in Central Europe, and an equally vast sea war, chiefly fought by aircraft using sea-going ships for transport purposes, all round the edges of the Pacific and in and out of the East Indian Islands.

Why?

So much may seem fairly obvious. But there will certainly be those who will say :—"Well! What about it? Why should we English bother our heads over other people's troubles? Why not leave the Americans to their own private war in the Pacific and why not let the Bolsheviks make Hell in Central Europe? Why not sit still and supply aircraft and other armament to both sides and be perfectly good war-profiteers?"

The answer is simply that we have got to stand by our own people. The war is a race-war as it was when Attila devastated Europe till he was defeated on the Plains of Chalons, and as it was when the Turks were turned back from the gates of Vienna. It is the age-long war between the square-heads and the long-heads, or, if you prefer it that way, between the tribes of Japheth and the tribes of Shem.

We have got to make up our minds whether to adopt the selfish motto :—"Every man for himself and Devil take the hindmost" or the altruistic motto :—"God for us all." And even the most selfish will appreciate the wisdom of the old proverb "United we stand, divided we fall."

If the Japhetic peoples are united, as all indications show them to be, and if the tribes of Shem are disunited, then the outlook for us is not encouraging. Those who set store by prophecies—which after all are only the utterances of far-seeing statesmen handed down by tradition—may recall the blessing of Noah, delivered after recovering from his lapse into alcoholism, when he said "God shall enlarge Japheth and he shall dwell in the tents of Shem." If Japheth expands westward as a conqueror then the tents of Shem are going to be mighty uncomfortable, as anyone will understand who has ever tried living on equal terms in the same house with a Russian of either sex. But if after a thorough good hammering the square-heads expand among us peacefully they may be quite useful, as will be understood by those who have had Japanese or Chinese or even Russian servants.

Preparedness.

Therefore it is necessary, even from the most selfish motives, to be ready to go into this war alongside the Americans as soon as ever it starts. Knowing something of how well the War Office was prepared for the outbreak of war in 1914 (the transport of the British Expeditionary Force to France was the most efficient piece of work in all the history of War) one has perfect faith in our readiness for the next war, so far as the Army and Air Force are concerned—and the Navy does not matter much.

But the difficulty as usual will be to convince the People and the Politicians of our duty to our race. The People can only be convinced by the Press. The Press always waits till it feels the trend of Public Opinion. And the Politicians wait till they see what the Press has to say. The result is something like a delay-action fuse. There is a fine burst when it works, but one has an anxious time waiting to see whether it is going off or not.

What we shall need in that moment will be a Statesman who will be big enough to stake his whole future on pitching the British Empire into the war without waiting and seeing, and a military genius to direct the war. The time finds the man whenever we are in real peril, and one believes that we have the men ready for the time.

Such men were not needed in the tribe-fight of 1914-18. The nation won the war on its own merits, in spite of the worst efforts of its politicians, much as the Army won the war without an inspired leader of any kind. Personally one regards the 1914-18 affair as a kind of apprenticeship for the race-war to come. And the two men who showed signs of being inspired, one as a statesman and the other as a leader of fighting men, are both young enough to be at the zenith of their powers for the next twenty years. So the outlook is singularly hopeful.

(To be continued.)

HONESTY AS ITS OWN REWARD.

The third report of the Royal Commission on Awards to Inventors (Cmd. 2275), which was published by H.M. Stationery Office on Jan. 12, gives statements as to the result of a large number of claims made on account of inventions and designs of aircraft or of accessories for use in connection with aircraft. Under the Royal Warrant appointing the Commission awards might be made under three heads :—(1) In respect of the user by the Government of a patented invention where no agreement as to terms was made, the Commission may settle terms and award a sum in respect of royalty, or as satisfaction in lieu of royalty; (2) in cases where terms for the use of a patented invention have been agreed or are in course of being agreed between the patentee and a Government Department, the Commission may, on application of the Treasury, make recommendations as to the giving or the withholding by the Treasury of approval of such an agreement, and may assist in adjusting the terms of such an agreement where the parties concerned differ; and (3) in the case of use of an invention, design, drawings, or process not patented or otherwise giving to the orginator any statutory right to payment or compensation, the Committee may make an award where the invention in question appears to have been of such exceptional utility as to justify this course.

It is mainly under Head 3 that awards in respect of aircraft have been made.

The comments of the Commission on certain classes of claim are not without interest.

Certain claims were made concerning cases where the Government having purchased from the inventor articles embodying a non-patented invention have proceeded to copy the said articles without any assistance having been rendered by the inventor to either the Government or the contractor manufacturing these articles. In such cases the Commission has held that the claim is not well founded and have refused the award. They base this finding on the ground that an award in respect of a non-patented invention is only justified where the inventor has rendered to the Government some special or exclusive service—such as the communication of drawings or information necessary to enable rapid and easy manufacture.

Which in effect means that the Committee hold that mere invention is unworthy of any reward. This seems to be likely to lead to serious injustice in some cases. There are cases where a badly felt want can be met by an appliance so simple that any fool could construct it without difficulty, and where the sole and only merit lies in the conception of that particular method of dealing with the emergency. Simplicity in the production and use of an appliance in such a case is obviously a very great merit of the particular invention, and the Commission's decision amounts in fact to holding that the merit of an invention is to count for nothing unless the inventor has been cute enough to look after his personal interests by protecting it. Legally, of course, their attitude can be justified, but it suggests that the inventor requires to be abnormally careful in any dealings he may have with a Government Department. A professional money-lender attending strictly to business is usually considerate and generous compared with a Government Department in its most liberal mood.

Another remark of the Commissioners is of interest as showing their attitude towards inventors generally. They refer to cases wherein an invention has been submitted to the Government and the Department concerned have constructed a comparatively small number of experimental articles embodying that invention, but have subsequently decided not to proceed with manufacture on an effective or commercial scale. They hold that such experimental uses does not entitle the inventor to an award. So far their attitude is comprehensible. The ostensible object of an award is to reward inventors for services rendered and it is obvious that they have to take cognisance of the extent to which a given invention was actually used. But they proceed to remark that the only benefit received by the Government in such cases is the testing of the invention, that an experimental test is normally at least as beneficial to the inventor as to the person making the test, and that, in fact, the inventor is fortunate in having his invention tested at the expense of others.

As a general comment regarding inventions capable of commercial exploitation under normal conditions, this remark might pass as reasonable. Applied generally to inventions offered to the Government in time of extreme emergency with the object of assisting that Government in the discharge of its duties, it sounds rather like a gratuitous insult to that by no means negligible class of scientific and technical men who during the war were moved to work rather in the public interests than for their own material profit. Fortunately men of this type are now fairly well accustomed to being treated with contempt and discourtesy by public and official bodies, but it does seem a little unnecessary for a Royal Commission to go out of its way to tell them that they should be thankful that not all of them were summarily kicked out of the Government Department which they had tried to help.

In addition to the granting of awards for inventions used by the British Government, the Commission were requested to investigate claims arising out of the communication to the American authorities of inventions and designs relating to aircraft and aircraft accessories in order that the American Government, on its entry into the War, might benefit at once by the experience accumulated in this country. It was agreed between the British and American Governments that if the latter placed orders in America for aircraft of British design, the British Government would bear any liability for the British designers' rights arising from use during the War, and that the American Government should either require American manufacturers to discontinue production of such designs at the end of the War, or should enter into their own arrangements with the British proprietors thereof if for their own purpose they desired to continue their production.

Some 24 cases of this nature were dealt with by a series of sittings wherein the Royal Commission was assisted by three representatives nominated by the American Government—by no means to the entire satisfaction of the claimants. The agreement above mentioned relates to production during and after the War. The British Committee was appointed to deal with awards for inventions used during the War. Certain British designs were put into production in America in large quantities, but were never used during the War. The British Committee would not make any award on behalf of these machines as they were not used in the War, and could not attribute to America any responsiblity for them because they were not produced after it. The American Government, however, used, and in some cases is still using, these machines, but the British proprietor of the designs receives nothing for that use.

It is not uninteresting to notice that the total sum awarded in respect of the use by the American Government of British aircraft designs and inventions amounts to the sum of £105,790.

From the terms of reference it might be concluded that the Commission was appointed with two chief ends in view. The first would appear to be that of limiting the liability of the State for the use of inventions in those cases where the inventor or proprietor had some legal basis for his claim to a sum determined rather by what the State could reasonably afford to pay than by that which the proprietor could exact under the unlimited play of the law of supply and demand. The second—which is clearly suggested by Head 3 of the terms of reference—was that of providing machinery whereby the State might show its recognition of services rendered under such circumstances as gave the inventor no legal claim or, in other words, of giving at least some encouragement to those who served the nation in its need to the disregard of their own personal and private interests.

It is difficult to find anywhere in this report signs that the Commission have interpreted their duties under this latter head in any liberal spirit. They seem rather to have adopted the attitude that the man who was fool enough to disregard his own legal and financial interests for those of the State has no claim to consideration at their hands.

It is therefore not unnatural that the services rendered to the State by the Aircraft Industry have been rewarded by the Commission in a manner which has produced a certain amount of disappointment and discontent on the part of claimants in regard to aircraft. The ability of that Industry to serve the nation as it did resided less in its possession of legal rights over definite designs and inventions than in its accumulated knowledge and experience—generally gained at no small cost—and in its willingness to place its knowledge at the disposal of the Government without preliminary haggling as to the reward it was to receive. And so far as can be discovered it has suffered accordingly at the hands of the Commission.

It scarcely needs to be said that those who have had dealings with this body are not likely to be strengthened greatly in any sense of their public duties when dealing with a Government Department in a public emergency.—W. H. S.

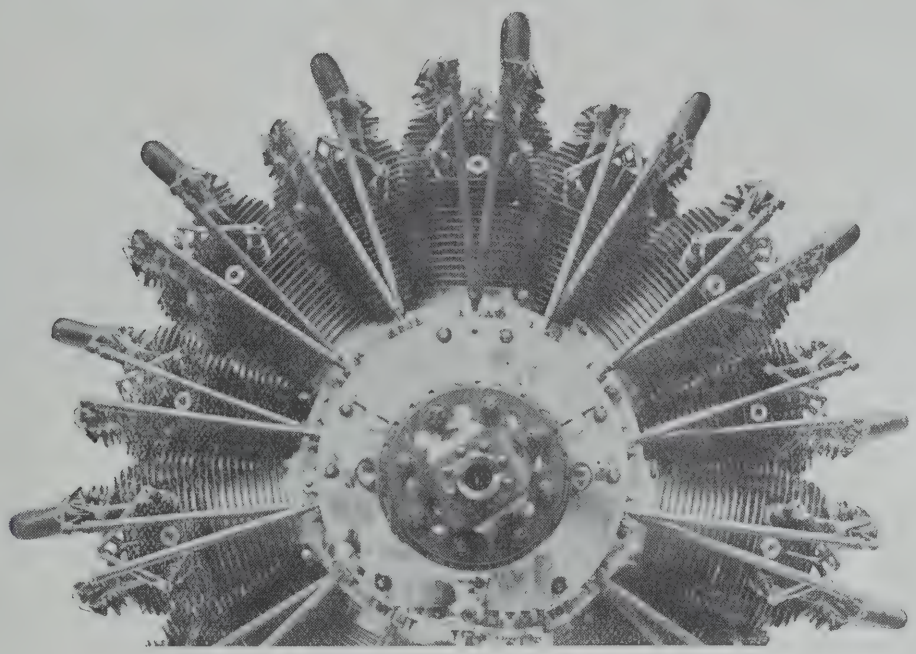
Awards in Respect of British Use.

The claims in respect of aircraft and aircraft accessories actually dealt with in this particular report and the amount awarded in respect of each claim are set forth hereafter.

Claim No. 240.—Mr. W. G. Walker, for "Escargot" Fan Brake (aero engine testing). Award, Nil.

241.—Capt. R. A. Coote and Major A. C. Hartley. Improvements in Synchronising Gears. Award, Nil.

242.—Major G. Hagleton. Lewis Gun Synchronising Gears. Award, £500.



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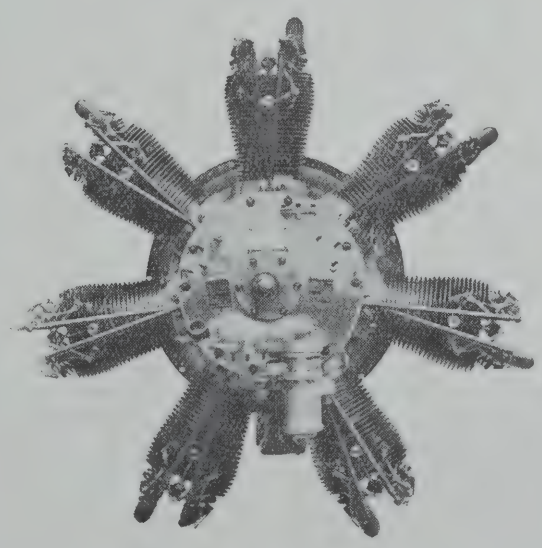
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At normal speed,
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Petrol consumption,
·55 pts./b.h.p. ·312 Litres per b.h.p. hour.
Oil consumption, ·03 pts./b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
760 lbs., 346 kgs.



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Petrol consumption,
·55 pts./b.h p. ·312 Litres per b.h p. hour.
Oil consumption, ·03 pts./b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
460 lbs., 209 kgs.

243.—G. Constantinesco and W. Haddon. C.C. Interrupter Gears. Award, £70,000

244.—Major F. W. Scarff. Synchronising Gear. Award, £250.

245.—Mr. A. H. Edwards. Improvement in Guns for Aeroplanes. Award, Nil.

249.—Capt. V. V. Dibovsky. Synchronising Gear. Award, £5,500.

250.—W. and T. Avery Ltd. Parnall Panther Ship Aeroplane. Award, £6,500.

253.—The Bristol Aeroplane Co. Ltd. Bristol Fighter Aeroplane. Award £50,000

254.—Mr. C. R. Fairey and the Fairey Aviation Co. Ltd. Hamble Baby Seaplane. Award, £4,000

259.—H. M. Hobson Ltd. Carburettors and Diffusers. Award, £1,350.

264.—Prof J. G. Gray. Gyroscopic Stabilising Gear (Bomb Sights, etc.). Award, £2,900.

268.—Société Anon. des Filatures, Corderies et Tissus d'Angers. Bessoneau Hangars. Award, Nil.

271.—The Pyrene Co. Ltd. Fire Extinguishers. Award, £1,515.

274.—The Curtiss Aeroplane and Motor Co. Ltd., New York. Aircraft and Seaplanes. Award, Nil.

278.—Col. J. C. Porte (executrix). Improvements in Flying Boats. Award, Nil.

279.—The Norman Thompson Flight Co. Ltd. NT.2, NT.2a, NT.2b, NT.3, and NT.4 Flying Boats. Award, £2,250.

280.—Mr. W. D. Oddy. Airscrews. Award, £500.

281.—Mr. H. C. Cleaver. Airscrews. Award, £1,200.

286.—The Sopwith Aviation and Engineering Co. Ltd. Cuckoo, Dolphin, Snipe, and Salamander Aeroplanes. Award, £40,000.

288.—Mr. Griffiths Brewer. Rip Panel for Kite Balloons. Award, Nil.

289.—Mr. J. G. Latta. Design of Parts of B.H.P. Engines. Award, Nil.

293.—Air Navigation and Engineering Co. and Société Avion pour l'Aviation et ses Derives. Spad Aeroplanes. Award, £600.

295.—Mr. W. de C. Prideaux (executrix). Metallic Machine-gun Belts (British user). Award, Nil. (An award of £5,000, plus out-of-pocket expenses, made by War Office.)

296.—Mr. W. de C. Prideaux (executrix). Metallic Machine-gun Belts (made for foreign Governments). Award, £300.

303.—Aircraft Manufacturing Co. Ltd., Société des Moteurs Gnôme et Rhône and Mr. G. Holt Thomas. 80 h.p. Gnôme and Le Rhône Engines. Award, £74,000. (Addition to £200,000 already received from H.M. Government.)

304.—Aircraft Manufacturing Co. Ltd., Société des Moteurs Gnôme et Rhône and Mr. G. Holt Thomas. Monosoupape Gnôme Engine. Award, £75,000.

306.—A. V. Roe and Co. Ltd. Avro Aeroplane. Award, £40,000

308.—Flying Officers D. E. Shaw and J. J. Brownridge. Dual Control of Aeroplanes. £1,500.

310.—The Aircraft Manufacturing Co. Ltd. and Capt. de Havilland. D.H. Aeroplanes. Award, £35,000.

Claims in Respect of User by the American Government.

1.—The Aircraft Manufacturing Co. Ltd. D.H. Aeroplanes. Award for War use, £6,500; for post-War use, Nil.

2.—Aldis Bros. Aldis Sight. For War use, £2,250; post-War use, Nil; future use, £1,250.

3.—Argo Co. Ltd., A. H. Pollen and H. F. Lanstead. Course-setting Bomb Sight. War use, £500; post-War use, Nil; future use, £600.

4.—Mrs. V. Batchelor. Bomb Dropping Mirror. War use, £50; post-War use, Nil.

5.—Bristol Aeroplane Co. Ltd. Bristol Fighter. War use, £2,500; post-War use, Nil.

6.—Handley Page Ltd. and Mr. F. Handley Page. "O" Type Biplane. War use, £9,000; post-War use, Nil.

7.—Capt. de Havilland. D.H. Aeroplane. Claim dropped at hearing.

8.—H. Hughes and Son Ltd. Aircraft Compasses. War use, £1,500; in respect of future use, £750.

9.—Mr. J. Imber. Self-sealing Petrol Tank. Award, Nil.

10.—Major F. C. V. Laws. Aircraft Cameras. War use, £1,000, future use, £1,500.

11.—Lt.-Col. J. T. C. Moore-Brabazon. Aerial Cameras. War use, £400; post-War and future use, Nil.

12.—Major J. M. Norman (executrix). Norman Sight. War use, £1,000; future use, £500.

13.—Petters Ltd. D.H. Aeroplane with Liberty Engine. Award, Nil.

14.—A. V. Roe and Co. Ltd. Avro Aeroplane. Future use, £1,000.

15.—Major F. W. Scarff. Scarff Ring Mounting. For War use, £1,000.

16.—Sopwith Aviation and Engineering Co. Ltd. Sopwith Aeroplanes. Award, Nil.

17.—Major H. E. Wimperis. Course-setting Bomb Sight and Drift Bomb Sight. War use, £1,000; future use £1,100.

18.—Lt.-Col. Ogilvie and the Aeronautical Instrument Co. Ltd. Air Speed Indicators. War use, £140.

19.—Mr. H. C. Cleaver. Air Screws. Award, Nil.

20.—Messrs. G. Constantinesco and W. Haddon. C.C. Interrupter Gears. War use, £15,000.

21.—Mr. W. de C. Prideaux. Disintegrating Machine-gun Belts. War use, £2,000

22.—Dr. J. Robinson. Directional Wireless System. War use, £100, future use, £1,250.

23.—Major G. F. B. Turner and Lt.-Col. C. R. Finch Noyes. Aircraft Bombs and Fuses and Bomb-dropping Gear. Claim withdrawn.

24.—Mrs. Mynnie Porte (executrix, Col. J. C. Porte). Flying Boats. Post-War use, £1,500.



LONDON FROM THE AIR.—The Tower Bridge photographed by the Surrey Flying Services. In the foreground is the Pool of London and in the left-hand top corner is seen London Bridge and Cannon Street Station. To the right of the Tower Bridge is the Tower of London and above that is the new building of the Port of London Authority. On the right is St. Katherine Dock whence the "Quest" sailed for the Antarctic.

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THE ROYAL AIR FORCE.

The London Gazette.

Jan. 13.

General Duties Branch.—The following are granted S.S. comns. in the ranks stated, with effect from, and with seniority of, the dates indicated :—Flg. Offs. (for Seven Years on the Active List).—G. L. Gandy (Lt., R.N., retd.); P. Hill (Lt., Indian Army, retd.); C. G. C. Woledge (Lt., Indian Army, retd.) (Jan. 6).

Plt. Offs. on Probation (for Five Years on the Active List).—K. C. Baker, G. S. J. Bowman, W. F. Bryanton, P. B. Chubb, P. K. Copperthwait, G. W. Cripps, E. J. Ellis, T. P. F. P. Fagan, H. D. Gunton, A. E. Hamilton, F. S. Homersham, D.C.M., M.M., J. A. E. Inkster, L. B. McGoverne, G. P. Mee, B. E. Moody, G. M. E. Shaw, D. C. Sherman, W. A. Shorten, V. J. Sofiano, E. G. D. Stewart, M.C., A. G. Watkins, E. T. Wiltshire (Jan. 6). H. A. Evans-Evans, C. W. Woodbyrne (Jan. 7).

The following Plt. Offs. are promoted to the rank of Flg. Off. :—J. E. Tomes (Dec. 5, 1924). R. T. Taaffe (Dec. 14, 1924).

Flt. Lt. D. Gilley, D.F.C., is placed on half pay, Scale B (Jan. 11). Sq. Ldr. W. D. Long O.B.E., is re-seconded for duty with the Egyptian Government (Jan. 1). Flt. Lt. E. J. Webster, D.F.C., is transferred to the Reserve Class A (Jan. 11). Flt. Lt. R. F. L. Dickey, D.S.C., resigns his perm. comn. (Jan. 14). Plt. Off. H. St. E. Dracott resigns his S.S. comn. (Jan. 14). Flg. Off. T. C. Dodd relinquishes his S.S. comn. on account of ill-health (Jan. 14).

Stores Branch.—Flt. Lt. A. G. Knight, M.B.E., is granted a perm. comn. in the rank stated (Jan. 14).

Reserve of Air Force Officers.—M. H. Findlay, D.S.C., D.F.C., is granted a comn. in Class A, G.D.B., as a Flg. Off. on probation (Jan. 13). The following Plt. Offs. are promoted to the rank of Flg. Off. :—H. B. Elwell (Dec. 2, 1924) (with seniority of Oct. 21, 1924). V. Vickers (Oct. 21, 1924). W. Dougall (Oct. 21, 1924). S. B. Atkinson (Dec. 2, 1924). H. S. Howard (Jan. 6). Flg. Off. E. B. Wilson is transferred from Class A to Class B (Jan. 13). Flg. Off. E. O'C. Parsons is transferred from Class A to Class C (Jan. 13).

Appointments.

Week ending Jan. 19.

General Duties Branch.—Flight Lieutenants W. S. Watson, to School of Naval Co-operation, Lee-on-Solent, 15/1. W. J. Umpleby, to No. 4 Sqdn., S. Farnborough, 15/1. R. A. Birkbeck, D.F.C., to No. 2 F.T.S., Digby, 15/1.

Flying Officers S. F. Cole, to H.M.S. *Argus*, 10/1. R. M. Thomas, to R.A.F. Depot, 19/1. C. R. Stewart, to No. 12 Sqdn., Andover, 1/2. E. A. Slater, to R.A.F. Depot, 19/1. E. A. Blake, M.M., to School of Naval Co-operation, Lee-on-Solent, 20/1. F. Jezzard, M.B.E., to H.Q., Coastal Area, 12/1. A. B. Ball, to R.A.F. Base, Leuchars, 15/1. N. H. D'Aeth, to School of Naval Co-operation, Lee-on-Solent, 15/1. H. L. Beatty, to R.A.F. Base, Leuchars, 17/1. A. R. B. Howell, to H.M.S. *Argus*, 17/1.

The undermentioned Flying and Pilot Officers are all posted to the R.A.F. Depot on appointment to S.S. comns. pending embarkation overseas with effect from 6/1/25 :—Flying Officers G. L. Gandy, P. Hill, C. G. C. Woledge. Pilot Officers R. C. Baker, G. S. J. Bowman, W. F. Bryanton, P. B. Chubb, P. K. Copperthwaite, G. W. Cripps, E. J. Ellis, T. P. F. P. Fagan, H. D. Gunton, A. E. Hamilton, F. S. Homersham, D.C.M., M.M., J. A. E. Inkster, L. B. McGoverne, G. P. Mee, B. E. Moody, G. M. E. Shaw, D. C. Sherman, W. A. Shorten, V. J. Sofiano, E. G. D. Stewart, M.C., A. C. Watkins, E. T. Wiltshire, H. A. Evans-Evans, C. W. Woodbyrne.

The undermentioned Pilot Officers are all posted on appointment to Perm. Comns. from the R.A.F. Cadet College with effect from 17/12 :—Pilot Officers A. H. W. J. Cocks, and P. McK. Terry, to No. 7 Sqdn., Bircham Newton. G. B. Beardsworth and N. S. Allinson, to No. 13 Sqdn., Andover. J. H. McN. Campbell, J. G. Franks, and J. R. Addams, to No. 56 Sqdn., Biggin Hill. S. H. Hardy, G. R. Beamish, and G. W. Hayes, to No. 100 Sqdn., Spittlegate. S. H. V. Harris, and R. J. A. Ford, to No. 25 Sqdn., Hawkinge. I. M. Scott, and A. H. Montgomery, to No. 32 Sqdn., Kenley. The Earl of Bandon, to No. 4 Sqdn., S. Farnborough. M. E. de L. Hayes, and G. F. G. Cox, to No. 39 Sqdn., Spittlegate.

Medical Branch.—Flying Officer (Dental) V. P. Ellis, to R.A.F. Depot on appointment to a Termp. Comn., 8/1.

An Award.

The King has approved of the following award for gallant and distinguished service in Waziristan :—

D.F.C.—Sq. Ldr. A. J. Capel, R.A.F.

Sq. Ldr. Capel has been in command of No. 5 (Army Co-operation) Squadron, R.A.F., stationed at Dardoni since November, 1923. He was previously Adjutant at the R.A.F. Cadet College, Cranwell, and was promoted to the rank of Sq. Ldr. on Jan. 1, 1923.

The King has given Flg. Off. Robert Collins, Royal Air Force, authority to wear the Médaille Commemorative Française de la Grande Guerre, conferred on him by the President of the French Republic, in recognition of services rendered by him as an Engagé Volontaire in the French Air Service.

Fatal Accidents.

The Air Ministry regrets to announce that in an accident at Ismailia, to a Bristol Fighter, of No. 208 (Army Co-operation) Squadron, Moascar, Ismailia, on Jan. 17, 1925, Flg. Off. James Alexander McLaren, M.C., the pilot of the aircraft, was killed.

Mr. McLaren is shown on the establishment of H.Q., Iraq Command, where he has been employed on Personnel Staff Duties (Airmen) since February, 1923. Previous to this he was in No. 24 Sqdn. in 1922, having been posted from Donibristle after a long course at No. 2 F.T.S., Netheravon.

The Air Ministry regret to announce further that in an accident at Ramleh to a Bristol Fighter of No. 14 (Army Co-operation) Squadron, Amman, on Jan. 17, 1925, Flg. Off. Ronald Reid Hardcastle Bruce, the pilot of the aircraft, and No. 326113 Leading Aircraftsman Alex Sutton, were seriously injured. Flg. Off. Bruce died in the Palestine General Hospital on the same day.

Mr. Bruce has been in No. 14 Sqdn. at Ramleh since May, 1922. He was gazetted Flg. Off. in September, 1921.

Air Operations in South Iraq.

The *Times* Correspondent in Iraq, writing from Baghdad on Jan. 8, states :—

Several raids were made during the past week by Ikhwan or Wahabi followers of the Sultan Ibn Saud Nejd on Iraqi tribes inhabiting a district about 70 miles south-west of Samawa. The total of the Iraqi casualties is not yet known, but in the first raid 46 persons were killed and in the later raids probably a good many more.

The first tribe to be raided was the Beni Huchaim, and it so happened that at the time a British special service officer was visiting the tribe for the purpose of warning its leaders that they had moved dangerously near to the Wahabi frontier. When the raid occurred he made a dash for the nearest railway station, 60 miles distant, enduring great hardships from rain and cold at night in the desert, and telegraphed the information to Air Headquarters in Baghdad. The wind and snow prevented an immediate aerial attack, but two days later a number of aeroplanes caught the raiders on the Iraqi side of the frontier and attacked them. The Ikhwan fled, abandoning their loot, and in a second air attack 58 camels were killed and the Iraqi tribesmen recovered their stolen property.

During the second Wahabi raid 150 Iraqi tents were destroyed with much slaughter. It is reported that every male over ten years old was killed, but the women were unharmed. As soon as news of this second raid was received a strong force of aeroplanes left Baghdad for Samawa to search for the raiders. They were located on Jan. 7 and were attacked with bombs and machine-guns. The Ikhwan lost 50 killed as well as many camels, and further attempts are being made to overtake fugitives. The Iraqi tribes have been given assurance of aerial protection if they wish to follow the track of the raiders to collect abandoned loot.

Sir Henry Dobbs, the British High Commissioner, has sent a strong message to the Wahabi Sultan, Ibn Saud, requesting him to prohibit any further raids and to order the return of the loot, and adding that any raiders caught will suffer severe punishment. I understand that the Air Officer Commanding has submitted to the Iraqi Ministry of Defence a proposal for the construction of a frontier post south of Nasiriyeh to be garrisoned by Iraqi infantry. As soon as a permanent block-house can be built it will be equipped with a wireless installation to enable it to report news of any future raids to Baghdad.

The *Times* correspondent, writing from Baghdad, on Jan. 13, states :—

The aerial counter-attacks against the Wahabi raiders continued for four days, and it is worth noting that, whereas after the first attack by aeroplanes the Wahabis scattered and fled, leaving the stolen sheep and camels wandering aimlessly about the desert, on the subsequent occasions they were most tenacious, endeavouring to retain possession of the loot, which was left in the care of the rearguards.

There were several separate raiding parties of Wahabis, whose attacks on two sectors of the frontier synchronised, whether by a



A Greeting from Old Sarum.

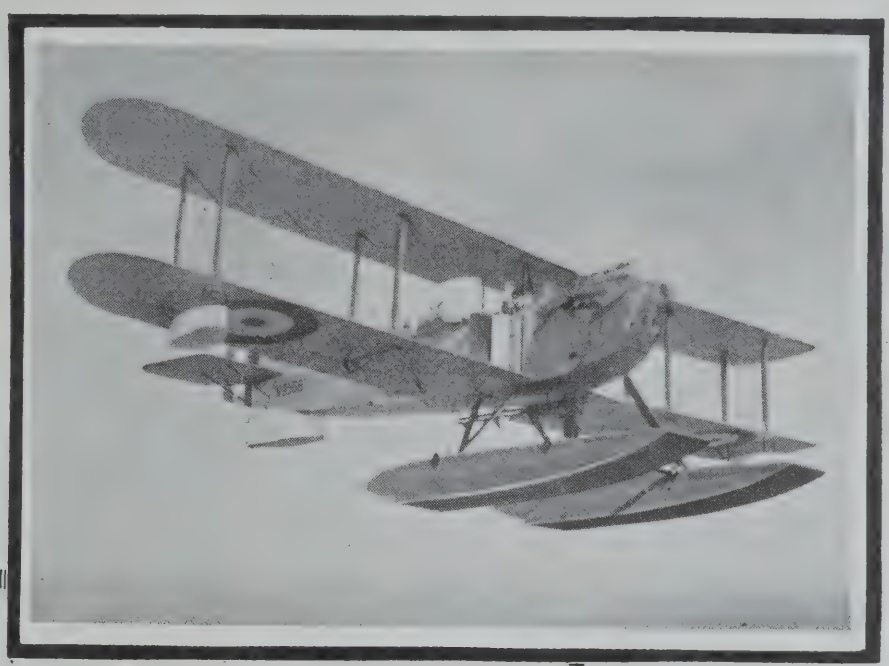
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A FAIREY SERIES III SEAPLANE (450 h.p. Napier engine) in flight over the Mediterranean near Malta.

THE FAIREY SERIES III. SEAPLANE.

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Excluding all mention of the many remarkable performances which have been put up by Standard Service machines engaged on Royal Air Force duties, the following are outstanding among the achievements of the Fairey Series III Seaplane during 1924:

MAY—A Fairey Series III, fitted with a Rolls-Royce Eagle VIII engine, was flown completely round the coast of Australia by Wing Commander Goble, C.B.E., D.S.O., D.S.C., of the Royal Australian Air Force, covering a distance of 8,568 miles in 90 flying hours.

JUNE—A Fairey Series III, fitted with a Rolls-Royce Eagle IX engine, was flown by Commander Flory of the Royal Swedish Navy from Hamble, near Southampton, to Stockholm in Sweden, 1,116 miles in 13½ flying hours.

AUGUST—A Fairey Series III, fitted with a Napier Lion II engine, obtained second place in the King's Cup Race round Britain, 960 miles in 8¾ hours, including stop for re-fuelling.

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definite plan or merely accidentally, it is hard to say. In the course of the operations, as the Wahabis swiftly retreated towards their desert fastnesses, the aeroplanes were compelled to make longer and longer journeys from their base in the pursuit, but there were no British casualties.

The R.A.F. Memorial Fund.

A meeting of the Executive Committee was held at No. 7, Iddesleigh House, on Dec. 17. The chair was occupied by the Hon. Treasurer, Sir Charles McLeod, and there was a large attendance of Members of the Committee.

The Secretary reported to the Committee that since the last Meeting of the Executive Committee on Oct. 15, the Sub-Committee dealing with Grants had investigated 56 cases, and that he (the Secretary) in the same interval, had dealt with 53 cases of a similar nature.

The Committee were informed of the fact that in accordance with an agreement with the Air Ministry, a certain sum of money had been placed by the Fund at the disposal of the Air Ministry for use by Air Officers Commanding R.A.F. Commands abroad, to be used for the immediate relief of the families of Officers and Airmen who die whilst serving abroad.

The Committee accepted with much pleasure a very kind offer made to them by the Officer Commanding the Electrical and Wireless School, R.A.F., Flower Down, Winchester, under which a large number of valuable reproductions of paintings by Flight Lieut. Verpilleux dealing with wireless telegraphy subjects during the Great War, were offered, together with a small sum, being the credit balance of the Picture Fund. It is hoped later to advertise these reproductions very fully and to effect sales both amongst the Royal Air Force and the general public, the proceeds coming to the Fund for its general purposes.

The next meeting of the Executive Committee takes place at the offices of the Fund on Feb. 18 at 3 p.m.

Hockey.

The following arrangements have been made for the semi-finals and final of the R.A.F. Senior Hockey Cup :—

Semi-final, Northern Section: Henlow (Inland Area Aircraft Depot) will play Leuchars (Royal Air Force Base) at Cranwell, on Thursday, Jan. 15.

Semi-final, Southern Section: Flowerdown (Electrical and Wireless School) will play Halton (No. 1 School of Technical Training) at Uxbridge, on Friday, Jan. 16.

Final: The final will take place at Uxbridge at 14.00 hours on Saturday, Jan. 17. After the match the Cup will be presented to the winners by Mrs. T. I. Webb-Bowen.

Tennis in the Middle East.

The finals of the R.A.F. Middle East Annual Tennis Tournament were played at the Heliopolis Sporting Club on Dec. 13-16, with the following results :—

Men's Singles: Flt. Lt. Gilbert, No. 4 F.T.S., beat Sq. Ldr. Buckeridge, H.Q., R.A.F., Middle East—4—6, 6—3, 6—1.

Men's Handicap Singles: Flg. Off. Millen (owe 15 1/6), No. 208 Sqdn., beat Flg. Off. Bister (scr.), H.Q., R.A.F., Middle East—6—3, 6—1.

Men's Doubles: Flg. Offs. Hudson and Millen, No. 208 Sqdn., beat Sq. Ldr. Duckeridge and Flt. Lt. Kyle, H.Q., R.A.F., Middle East—6—2, 9—7.

Men's Handicap Doubles: Sq. Ldr. Duckeridge and Flt. Lt. Kyle (owe 15 1/6), H.Q., R.A.F., Middle East, beat Wing Cmdr. Baldwin and Sq. Ldr. Park (owe 4/6), H.Q., R.A.F., Middle East—6—2, 10—8.

Mixed Doubles: Sq. Ldr. Buckeridge and Mrs. Macfarlane beat Mr. Boycott and Mrs. Boycott—6—3, 6—2.

Mixed Handicap Doubles: Flt. Lt. and Mrs. Bayley (owe 3/6) beat Wing Cmdr. and Mrs. McKean (owe 2/6)—6—2, 6—2.

Ladies' Handicap Singles: Mrs. Brooks (scr.) beat Mrs. Boycott (owe 3/6)—4—6, 6—3, 6—3.

The Command Inter-Unit Challenge Cup was won by H.Q., R.A.F., Middle East, with 43 points, 208 Sqdn. runners-up with 25 points.

After Air Commodore Clark Hall had thanked the Committee for their work in connection with the Tournament, Lady Swann kindly presented the prizes.

London–Cape Town.

According to the Central News, another flight from London to Cape Town is being organised under the ægis of the Air Ministry, with the double object of discovering the most suitable bases to be used for a regular air service, and of testing a new seaplane. The story, for which one can find no confirmation, runs thus :—

The flying boat is undergoing severe trials at Felixstowe, two officers have been selected for the flight, and at present it is proposed that a start shall be made early in June.

The route will be : Felixstowe, across France to Toulon, and thence over the Mediterranean, eastwards, stopping at Malta, Corfu, Constantinople, and Athens, Alexandria, Khartoum, Kenya Colony, and Buluwayo, and the line to Cape Town, with possibly one or two variations to touch at Johannesburg and Pretoria.

The route from Khartoum is a little vague, particularly for a flying boat, although it is seemingly quite possible to follow the Nile to Lakes Albert, Edward, Kivu, Tanganyika and Nyassa, to the Zambesi river, thence down the coast to Cape Town.

Ad Astra.

[" The Military Use of Astronomy," by Major F. C. Molesworth, R.E., F.R.A.S., with a foreword by General Sir W. R. Birdwood, Bart., G.C.B., G.C.M.G., K.C.S.I., C.I.E., D.S.O., A.D.C., General Officer Commanding-in-Chief, Northern Command, India. 112 pages, two plates. 3s. 6d. net. Longmans Green and Co.]

In his foreword to this book General Birdwood, who will best be remembered by most wartime pilots as the brilliant Commander of the Anzacs in Gallipoli, says that when he was at school and at Sandhurst very little was taught about astronomy and that though more is taught now there is not nearly enough of it. In his opinion this book by Major Molesworth will supply a great need.

If astronomy is of use to the Army officer it should obviously be of still greater use to the militant or even to the civil aviator. The motto of the R.A.F. is still " Per Ardua ad Astra." Major Molesworth's book will probably make the aviator's way to the stars a trifle easier.

The book consists of an introduction setting forth the general uses of astronomy and gives elementary facts about the solar system. Thereafter the author deals with the measurement of angles and the identification of stars and he gives a variety of ways of measuring time by the Sun. The chapters on the Moon and its influence on the tides are useful and interesting.

Perhaps the most immediately useful section is that dealing with telling direction and time by the stars. Altogether the book should be very useful and at its price it is well within the reach of everybody who takes an intelligent interest in his profession.

A Chinese Chef Flies!

The following story is extracted from the *Air Service News Letter* with acknowledgments :—

A good yarn is going the rounds at Brooks Field, San Antonio, Texas, the home of the Air Service Primary Flying School, regarding Joey Wing Hi, Celestial Chef and flivver pilot extraordinary out here, who ran afoul of the law the other day. It seems that Joey had poured tabasco sauce, or something more than usually potent, into his gas tank, with the result that his ancient wreck exceeded considerably the moderate speed of 20 m.p.h. which the law demanded. So the Law dragged Joey down to the village bastile, where the Sergeant booked him.

Q. " Name?"

A. " Joey Wing Hi."

Q. " Where from?"

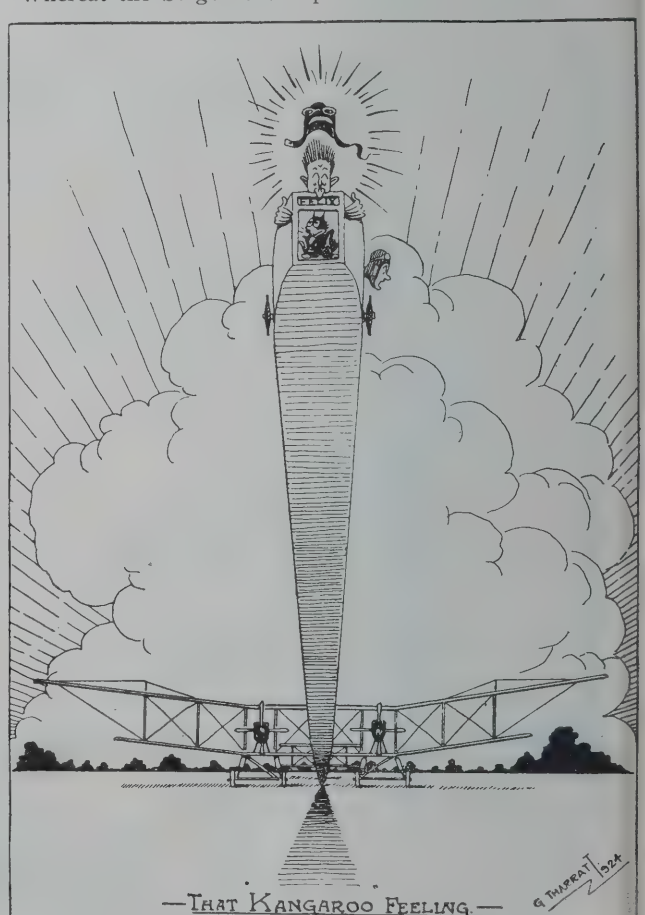
A. " Blooks Field."

Here the Sergeant paused, because from the cosmopolitan nature of the School out here it might be the nephew of the Chinese Emperor as well as not.

Q. " Are you a flyer?"

Here Joey brightened up at once. " Sure, me fly eggs, me fly steak—me fly ev'lything."

Whereat the Sergeant collapsed.



A drawing which explains itself, reproduced from " The Olympian," the House Organ of the Blackburn Aeroplane Co., Ltd.

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A Mooring Mast for Ismailia.

The Aviation Correspondent of the *Daily Telegraph,* in a paragraph on Jan. 13, states :—

Statements have appeared to the effect that the British airship R.36, which will make a voyage to Egypt when the arrangements are completed will proceed to Cairo, and that that city will be a halting-place on the British-India airship route when the new airships are completed in 1927. Ismailia, on the Suez Canal, has, however, been chosen as a halting-place, and here a mooring mast is shortly to be erected.

Among the reasons for the choice of Ismailia in preference to Cairo, in all probability, is that it is in the British military zone. There are other obvious advantages—geographical and communications. As to the question of a permanent airship station in Egypt, at the present moment it would appear that Ismailia is as likely to prove as suitable as Alexandria or Cairo.

A South African Air Mail Service.

It is reported that an experimental, weekly air-mail service between Cape Town and Durban is to begin on Mar. 2.

The outgoing aeroplane is timed to leave Cape Town at 08.00 hours on Monday mornings, within an hour of the arrival of the mail boat, and after quarter-of-an-hour stops at East London, Port Elizabeth, and Mossel Bay, is due to arrive at Durban at 18.30 hours the same evening.

In the reverse direction the aeroplane will leave Durban at daybreak on Fridays and will catch the mail boat at Cape Town at 16.00 hours, after stops as on the outward journey.

The aeroplanes will not carry passengers.

Nordic Aid for Japan.

Col. the Master of Sempill, who commanded the British Mission which reorganised the Japanese Naval Air Service, is at present in Copenhagen, where he is supervising the construction, testing and despatch of ten Rohrbach Ro.II all-metal seaplanes (two Rolls-Royce Eagle IX engines each) ordered from the Rohrbach Metal Aeroplan Co., A/S., of Copenhagen, by the Imperial Japanese Navy.

This Anglo-German-Danish combination represents a fairly complete Nordic alliance in aid of the Mongoloid peoples.

Paris—Lake Chad.

On Jan. 18, after two postponements owing to unfavourable weather, the two Blériot 115 biplanes (four 180 h.p. Hispano-Suiza engines each) left Paris in an attempt to fly to Lake Chad and back.

The two aircraft, named "Roland Garros" and "Jean Casale," are piloted by Lieut. Pelletier Doisy and Lieut.-Col. Vuillemin, the former carrying Col. de Goys, Adjt. Besin, and a wireless operator, and the latter Capt. Dagneaux, a mechanic and wireless operator.

In spite of fog the two aircraft got away from Paris at 11.45 hours for Perpignan, but were forced down at Avord at 13.30 hours. On Jan. 19 the fog lifted slightly but thickened again before noon, so that their departure for Perpignan was postponed.

More Records for France.

On Dec. 23, M. Doret, flying a Dewoitine D.1C.1 monoplane (300 h.p. Hispano-Suiza engine and 1924-type Lamblin radiators), carrying a useful load of 250 kgs. (570 lbs.), attacked a number of World's Records.

Over the Villesauvage-La Marmogne-Villesauvage circuit of 100 kms, he broke the previous speed records for 100 kms., 200 kms., and 500 kms. His average speeds for these distances were 231.392 km.p.h. (144.62 m.p.h.), 225.705 km.p.h. (141.065 m.p.h.), and 223.988 km.p.h. (139.99 m.p.h.) respectively.

On Dec. 29, over the same course, he succeeded in beating the speed record over 1,000 kms. without carrying any useful load, at an average speed of 221.7 km.p.h. (138.5 m.p.h.).

The performance of the Dewoitine monoplane, which is purely a standard single-seater pursuit machine, in the above performances, is very noteworthy, particularly in the first three records when carrying a load of 250 kgs.

It has since been announced that M. Doret has been decorated with the Medaille Militaire for these un-military performances.

On Jan. 10, M. Descamps, flying a De Monge 101C.1 (Koolhoven F.K.31 built under license in France) fitted with a 380 h.p. Gnôme-Rhône Jupiter (Bristol Jupiter built under license in France) beat the 100 km. and 200 km. speed records carrying 500 kgs. of useful load.

Over the Villesauvage-La Marmogne circuit he covered the 100 kms. at a speed of 206.42 km.p.h. (127.98 m.p.h.) and the 200 kms. at 205.85 km.p.h. (127.61 m.p.h.).

M. Descamps is now preparing to attack the 500 km. record carrying the same useful load.

A Long French Naval Flight.

Three Farman Goliaths belonging to the French Navy, each fitted with two 380 h.p. Gnôme-Rhône-Jupiter engines, recently flew from Paris to St. Raphael, near Marseilles. After being fitted with floats they continued their flight to Bizerta in North Africa.

The total distance of the flight was approximately 800 miles in a straight line, more than half of which was over the Mediterranean Sea.

The Jupiter-Farman Goliath is used in the French Navy for bombing and torpedo-dropping purposes.

Spanish Aviation in Morocco.

The facts contained in the following notes on Spanish aviation in Morocco are derived in the main from the Directorate of Aviation in the Spanish Army :—

Amongst other valuable work done by the Spanish pilots in the campaign against the Moors has been a complete and detailed topographic map from the air of the whole Spanish-Moroccan Zone including the distribution of the population in the disturbed region.

The chief work, however, of the Spanish Air Service has been bombing from the air. During the early part of the year great quantities of incendiary bombs dropped by mass formations prevented the rebellious tribes from gathering their crops. Frequent bombardment by single machines was also carried out and a number of objectives were hit practically every day. Each machine carried a machine-gun, which was operated simultaneously with the bombs. The influence of these attacks on the tribes was enormous, on many occasions causing them to surrender without any ground operations at all.

In all land operations the troops were accompanied by squadrons of aircraft acting as advance scouts, in addition to bombing and machine-gunning the enemy on their own. Other work which was carried out by the Air Service was intelligence and the provisioning of outposts. In order to carry out the latter work the machines had to fly very low and often down and through ravines, the enemy, who are remarkably good rifle shots, pouring bullets into the machines.

There were no Moorish aircraft but some of the Spanish machines on their return showed over a thousand bullet holes.

Forty beleagured outposts were relieved from the air during the campaign, including Xauen, the population of which with the garrison were completely cut off for a week.

Half the machines at each base made a daily reconnaissance flight over the entire Spanish zone, some of the flights lasting seven hours.

The air squadrons of the Spanish Army were based at Melilla, Tetuan and Larache. The machines used were Bréguets, de Havillands, and Bristols. There was also a squadron of scout machines used chiefly for carrying despatches. From Nador Melilla a group of Dornier seaplanes operated into the interior. The Spanish Naval Air Service co-operated most efficiently in all the military operations. They were equipped with Supermarine Amphibians which gave the most splendid service.

At the beginning of the revolution about a hundred machines of all kinds were sent to the Moorish bases and about 40 per cent. have been shot down or lost owing to the pilots having been shot down or meeting with some accident. About thirty per cent. of the personnel of the Spanish Air Service have lost their lives.

The retirement of General Primo de Rivera's forces to strong coastal positions does not mean the abandoning of Spain's Protectorate in Morocco, the position being very similar to the work of the British forces in Iraq which Sir Samuel Hoare has described as being "control without occupation."

A Supermarine Event.

On Friday, Jan. 9, the staff and employers of the Supermarine Aviation Works Ltd., of Woolston, Southampton, successfully carried through a social event which under the comprehensive description of a conversazione included two concerts, two dances, a prize distribution and a whist drive. The affair was arranged by the Supermarine Sports and Social Club and was a very ambitious first attempt. Thornycroft's Institute at Woolston was taken for the occasion.

Four or five hundred people representing every grade of the firm's personnel were present and enjoyed the varied programme immensely

In the large hall was a display of sports cups and prizes On the platform were Mr. G. L. Wood, Chairman of the directors and president of the Sports and Social Club, Squadron-Commander James Bird (late R.N.), managing director, and Captain H. Leigh Mossley and Mr. J. Dickinson, directors.

Commander Bird spoke of the progress the Club was making. Their record of having won ten out of their fifteen cricket matches, four out of their nine tennis matches, and six out of their nine junior football matches was one of which to be proud. The rowing section had won the McDermott Challenge Cup which was the first trophy the Club had won in outside competition. In conclusion he expressed thanks to Mr. J. Smith and Mr. Rhys, of Thornycroft's, for their kindness in letting the Club have their Institute for the night and to Mr. E. W. Marshall, general secretary, for organising the affair.

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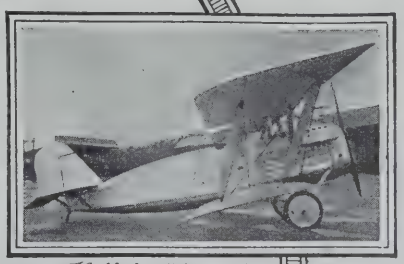


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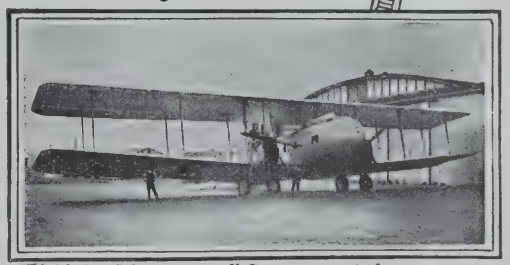
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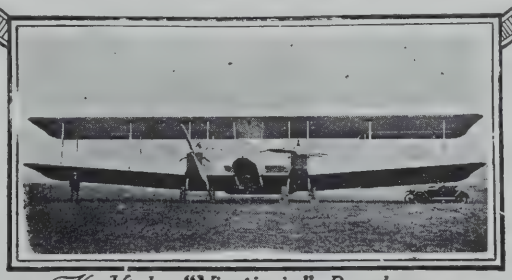
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METAL CONSTRUCTION IN FRANCE AND ENGLAND.

(Concluded.)

On the whole, therefore, it is possible to hold that so far as present preparedness for war on a large scale is concerned, the French policy in the matter of metal construction has achieved a considerable degree of success. Whether or not this country has been justified in following a totally difficult policy directed rather towards the needs of a more remote future only the future itself can reveal.

It may safely be said that our own experimental work has placed the British designer in a very strong position. The inherent difficulties of using steel for aircraft are so much more acute than those involved in the use of the lighter alloys that we have been forced to develop methods by which the material employed is used to the utmost advantage. It may well be doubted if there is any other structure produced by man which can compare with a modern British steel aeroplane in the effective use of the physical qualities of the materials employed. And the knowledge which has been acquired in regard to the use of steel can be applied directly to the lighter alloys.

But it undoubtedly seems that the time has come for a reconsideration of this subject of the material to be used. The only reasonable argument against the lighter alloys for aircraft construction is a suspicion as to their uniformity, reliability, and capacity to resist corrosion. The world has many centuries of experience of the making and working of steel, yet it is even now no simple matter to procure steel strip of the uniform high quality desirable for aircraft work.

Our experience of aluminium and its alloys as a commercial material does not extend to half a century, and it can be said with certainty that the suspicions which exist in regard to these alloys result rather from our ignorance and inexperience than from any intrinsic inconstancy in the alloys themselves.

It may further be said that these materials even to-day can be regarded as at least as uniform and reliable in quality, and less subject to deterioration in service than spruce—certainly far more so than the timber which Germany had to use during the last war or that which we may have to use in the next.

Such uncertainties as do exist on this head can be removed only by practical experience with the material. During the preliminary stage of acquiring that experience a sufficient degree of safety can be secured precisely as it is secured in timber machines, that is by providing a largely redundant structure and by the fixing of maximum stress limits on a conservative basis.

The light alloys have very definite advantages as a structural material. They are more easily worked than the special steels used in British strip work, thanks to their greater bulk they can be used in less complicated sections—in other words they require less working—and the necessary heat treatment—although of the first importance—can be reduced to a relatively simple routine. For these reasons it seems fairly certain that aircraft can be built of light alloys with a less expensive special equipment and with a smaller proportion of highly-skilled technical staff than is possible in the case of steel-work. These factors are likely to be of supreme importance in the next war.

And the light alloys give to the designer a greater freedom in regard to the disposition of material. A steel-skinned fuselage or a set of steel-covered wings is at present beyond the range of practical production. With a light alloy a metal skin which is also an important if not the main stress-carrying member, is a perfectly practicable proposition. And the design of aircraft is not at present in a stage so advanced that we can afford to discourage the development of such relatively novel forms of structure.

It is the easiest thing in the world to "crab" a novel and untried idea—particularly if one is in a position to prevent it receiving adequate trial. The history of aviation supplies many eloquent examples of the unwisdom of indulging in this particular form of amusement. Nevertheless our Air Ministry has for long been engaged in crabbing light-alloy construction. Thanks to the enterprise of one or two people—among whom Mr. Oswald Short deserves special mention—they are now displaying a certain degree of sticky concurrence in the experimental use of these materials.

But we are undoubtedly far behind France or even Germany in our practical knowledge of the qualities of the light alloys and of the methods of construction which can be used with them.

The qualities of the light alloys have been studied in the laboratory on an admirably broad scale in this country, and our knowledge of their metallurgy and general physical characteristics compares well with that of any other country. But between a laboratory knowledge, such as we possess, and a practical workshop experience of the application of a new material there is a very wide gulf, and it is precisely this practical workshop experience which we lack at present.

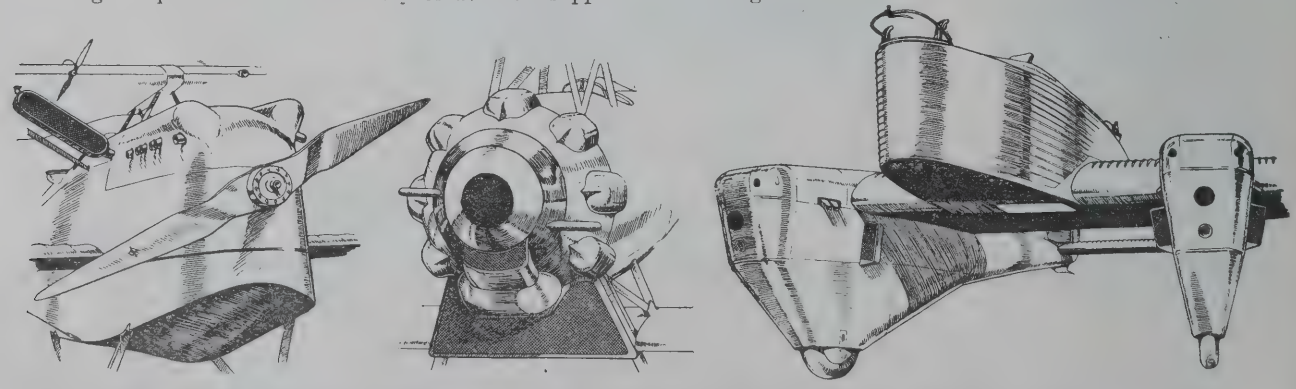
On this ground it is of the first importance that the Air Ministry should revise its attitude towards the light alloys. It is no use waiting for the light alloys to disprove our suspicions by their own efforts. Defects of manufacture, of working, and of utilisation will disappear when, and only when, we have acquired sufficient experience of their behaviour in practical use.

No one in his senses attempts to build a metal ship by replacing the individual members of a wooden vessel by equivalent members of similar overall dimensions and shape, in light-gauge steel. This however is what we are doing to-day in this country in regard to metal aircraft. The ship and the aeroplane are two such widely-divergent appliances that it is quite possible that a process that would be ridiculous in a ship is the most satisfactory one to adopt in the aeroplane.

But it is quite possible that with suitable materials a much more satisfactory aeroplane can be produced by departing altogether from the general structural arrangements which has been found to give satisfactory results when timber forms the greater part of the structure.

A glance over the machines which have been built of light alloys in France during the past few years will reveal a number of machines in which attempts have been made to depart widely from the classical structure of the war-time biplane—attempts which could not have been made either in steel or in timber. It is a matter of no great moment that, so far as one can at present see, none of these efforts has achieved any startling success. In the absence of the experience acquired in actually building these experimental types, it is impossible for anyone to assess their value. A total failure as a flying machine may conceal the fact that in the process of construction the manufacturer has developed methods of construction of the greatest possible value. Each experiment of this sort—be it failure or success—represents experience, and no one—not even he who gains that experience—can adequately estimate its value until the moment for its application arrives.

The policy which has been pursued in this country in the past few years has deprived us of any extensive experience of the light alloys, not only as regards their suitability to replace timber or steel as a structural material but also as to the value of types of structure which are possible in the lighter metal but are impracticable in either steel or wood. And if we are to give due consideration to the probable developments of the not very remote future it is surely time that we investigated the possibilities of forms of metal construction other than that of translating timber members into steel filigree-work.



MORE NOSES FROM PARIS.—Left, the Levasseur ship's fighter with water-tight fuselage, centre, the cowling of the 500 h.p. Salmson in the Hanriot 31, and right, the all-metal Schneider twin tail.

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WHAT IS THE USE OF WIND TUNNELS?

On Thursday, Jan. 8, the Royal Aeronautical Society met in the library at 7, Albemarle Street, for an informal technical discussion on the Value of the Wind Tunnel as an Aid to Design.

Capt. Walker, opening, said that though the wind tunnel was of the very greatest value in giving indications of the line along which improvements in design might be sought, tunnel tests on a complete model aeroplane did not form a satisfactory basis for design. Largely this was because the slip-stream effect was absent in the tunnel, but it was also due to the fact that the tunnel did not simulate the dynamic conditions of flight.

He instanced the case of the D.H.10 which proved 8 m.p.h. slower than the tunnel suggested. Dropping the engine nacelles from half-way up the gap onto the lower wing gave them the 8 m.p.h.—although model tests indicated that it would make no difference. Again, the D.H.29 monoplane exhibited a change in the load on the control lever of 45 lbs., engine on and engine off. This was apparently due to a violent change in the form of flow which was not indicated in model tests. The machine also seemed to develop a maximum lift coefficient much larger than the model would suggest.

Effects of the greatest importance in actual flight were not evident under conditions of model test, particularly in regard to controllability.

On these grounds he had formed the opinion that even if tests on the complete model were used as the basis of design it still remained necessary to carry out full-scale experiments to correct troubles not revealed in the model, and that it was both quicker and cheaper in the end to go straight to full-scale test.

As an instrument of research the tunnel was of the greatest value. To the designer tunnel tests were necessary to establish the general run of the phenomena with which he had to deal. What the designer needed was systematic experiment. The series of tests of wings carried out by Dr. Junkers, and reported in his recent lecture before the Society, was an excellent example of the type of systematised work which would be welcome.

Most of the British tests available for the designers' use were disconnected and not directly comparable one with another, which greatly impaired their value.

The aircraft manufacturers could not afford to make systematic tests of this type on a large scale—which should be made by the national laboratories. He could, however, carry out full-scale experiments fairly cheaply. If the N.P.L. and the R.A.E. would provide data such as was needed the private wind tunnel would become an unnecessary luxury.

Mr. W. O. Manning suggested that if the wind tunnel was of direct value in design, aircraft produced by the firms who possessed private tunnels should show marked superiority over those produced by the firms who had no tunnel. There was no evidence that this was so. Considering the intricate and delicate nature of the appliances needed for tunnel tests, and the skill required to make and interpret them, it was difficult to believe that the private tunnel would pay for itself.

Major Barlow agreed with Mr. Manning. A four-foot channel was the most the ordinary firm could afford, but to obtain reasonably satisfactory results a seven-foot channel was necessary. The official channels ought to give more direct help to the designer—at present they often kept him waiting six months for a model test. He would like information of an authoritative nature as to the possibility of correcting results from a four-foot tunnel to agree with those obtained in the seven-foot.

Mr. R. McKinnon Wood, as a wind-tunnel man, found it difficult to think of taking the responsibility of designing without reference to a model test. There were rules—well checked by direct experiment—by which tests in a small tunnel could be corrected for tunnel-wall interference and made to agree with tests in a larger tunnel or in free air. The evidence now was very strong that for at least standard types of machines tunnel tests gave good agreement with the real machine. It was important to reproduce slip-stream effects, and to correct for tunnel-wall interference. Subject to these precautions the tunnel gave reliable data concerning trim, stability and control. There was room for a still further development in the technique of tunnel testing, but to-day such work was of the utmost value and was not prohibitively costly.

Dr. Piercey was surprised that anyone should doubt the value of the tunnel as an aid to design. He recalled that the Wright brothers, after having tried for years to produce an aeroplane out of their heads, went to their little wind tuunel and then at once made a machine which flew. He could understand a hesitancy to lay down a tunnel—it was a costly instrument both to build and to run. But the private tunnel should be used to provide the systematic data the designer needed, leaving the national tunnels free for research.

Mr. Rex Pierson, as a designer who used a tunnel, had to speak strongly in favour of its use for design. It could be extremely dangerous however if it were used carelessly. For practical purposes it was essential to test with an airscrew running on the model. He drove his airscrews from outside by Meccano chain. They had developed a method of studying air-flow patterns which was useful for discovering the seat of abnormal resistance. This set up marked eddies, and if the eddies could be found the cause of the resistance was obvious. They used a piece of thin metal sheet, covered with tacky varnish and sanded. French chalk blown down the tunnel stuck to the varnish and showed flow lines. They still found tunnel tests were not quite satisfactory concerning balancing problems—but longitudinal stability could be determined satisfactorily. Tests of isolated components could be most misleading.

Capt. G. T. R. Hill thought much of the discredit attaching to model tests was due to errors of interpretation—largely that of neglect of slip-stream. He though there was a case for a size of tunnel intermediate between the four- and the seven-foot. Models for the smaller tunnels were too small to make with accuracy, and the seven-foot size cost too much. But he suggested that there was no need to spend as much money on polished mahogany, etc., as was spent by the Government laboratories.

Wing Cdr. T. R. Cave-Brown-Cave recalled that during the war they had constructed a crude wind tunnel of large size at Kingsnorth. They did not intend it for accurate measurements, but rather to investigate the general behaviour of bodies in a wind. This tunnel was built from old packing cases, and power was supplied by a 150-h.p. engine. They actually got a higher wind speed and a steadier flow than the N.P.L. could obtain at that date. They were now proposing to construct a very large wind tunnel at Cardington to study the behaviour of moored airships, and he thought there must be many cases where a relatively crude and inexpensive tunnel could give valuable information concerning general behaviour, without the need for accurate measurement.

Mr. Reynolds believed the tunnel was well worth having. It gave at least some sort of idea of what was likely to happen to a new design at a good deal less cost than that of flying the real machine. Even without the slip-stream it was often possible correctly to predict pitching moments and trim.

Mr. Griffiths Brewer described a method of his suggestion used by Orville Wright for making accurate small models. The method depends on the use of an engraving machine controlled by templates of much greater size than the models.

Mr. McKinnon Wood, in reply to a query, said that the main obstacle to the compressed-air tunnel was its cost. It was possible by such a tunnel to reach values of V.L. equal to that of full-scale flight, but it was not certain that this would end all their troubles. It might be found that turbulence would intervene. He himself did not think turbulence would prove to be serious, but it must be remembered that we did not really know whether the so-called scale-effect was not really a turbulence effect.

Major O. T. Gnosspelius wanted to know all about turbulence. The phenomena of flow through tubes suggest that the flow in a tunnel must be turbulent—that is, the air was not moving in straight lines. In some cases apparently this did not matter, but he believed that in others it was important. High speeds without turbulence could be achieved in a tank, and his own pendulum gear should avoid it. He had found that the pendulum invariably agreed with the tunnel over resistance, but not over lift. High-lift wings generally did not give their high lift on the pendulum, and he believed that this was due to the relative absence of turbulence in his case.

Mr. McKinnon Wood said that turbulence meant eddying motion. In the tunnel the honeycomb set up small eddies which decayed rapidly as they passed down stream. Some continental tunnels—the Göttingen one for instance—was possibly much freer from turbulence than their own. They had tried increasing turbulence by putting a screen close to model. It had a distinct effect on the resistance of airship models, but none on an aerofoil.

Capt. Sayers recalled a report by the U.S. Advisory Committee where a systematic difference of about 20 per cent. in the maximum lift of a family of thick wings when tested in different tunnels was ascribed to a known greater turbulence in the tunnel giving the higher lift. This suggested that the Americans were satisfied that turbulence could have such an

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effect, and also that the failure of the British experiment mentioned by Mr. Wood could be explained if the model used were R.A.F. 15, which seemed to be very insensitive to change of conditions. Perhaps repetitions of the tests with, say, R.A.F. 19, might lead to different results.

MR. REYNOLDS mentioned that in the tests of Handley Page slots, Göttingen could never obtain such high-lift coefficients as Handley Page, Ltd., could in their own tunnel. But unfortunately for the theory that turbulence accounted for high lift, full-scale tests confirmed their figures and not the Göttingen ones.

DR. PIERCEY said that the flow round an aerofoil at the same incidence often varied in form. In cases where flow was on the point of instability a very small disturbance might cause a marked change. It was possible to alter the lift coefficient under such circumstances by knocking on the tunnel wall, and at the same angle one often got two different lifts according as one reached that angle by increasing or by decreasing the incidence.

MR. MANNING here suggested that from the discussion one might conclude that in the hands of a skilled operator, one could get any result that one desired. It was perfectly obvious that a small crude tunnel, unskilfully used, could be dangerously misleading.

MR. REYNOLDS said that with the N.P.L. and R.A.E. to do the heavy part of the work and to supply information as to precautions to be observed and the corrections that must be made, the small tunnel could be both useful and reliable. He felt sure that those who used tunnels got more information than those who did not. And the designer should be able to learn more from his own use of the tunnel than could the tunnel specialist.

CAPT. WALKER wound up the discussion by saying that he did not mean to condemn the tunnel. What he had against it was that the tunnel test on a complete model could not be applied to the full-scale with such certainty as to allow the designer to dispense with full-scale experiments. And as the designer had only limited sums to spend on development work he reached his end more cheaply and promptly by going straight to the full-scale experiment.

The designer did need more systematic and correlated tests such as the N.P.L. and the R.A.E. could provide, and he thought they might properly expect them to undertake this work.

THE EVOLUTION OF THE AVRO.

The paper on "The Evolution of the Avro Standard Training Machine," read by Mr. R. J. Parrot before the Institution of Aeronautical Engineers, traced the evolution of the famous 504 type from its progenitors, the 35 h.p. Green Avro of 1911, and the 50 h.p. Gnôme two-seater of 1912, to the 80 h.p. Gnôme 504 type of 1913, and then through the successive stages which occurred during the war and after.

At the beginning of the war 80 h.p. Gnôme 504 Avros were on order by both the War Office and the Admiralty. The types supplied to the two services were somewhat different—the Naval machines had bigger wing-spars and were fitted with fins. Despite attempts to get the two services to agree to one standard type, these differences persisted up to 1918, when the services were united.

In the early days of the war Avros were used in France and gave great satisfaction. Among their achievements Mr Parrot recalled the raid on Friedrikshafen and the first raid on Cuxhaven. In time, however, they were found to be too slow to meet the improved types of enemy machines which appeared, and they were withdrawn from the front and used only for training purposes. Proposals to fit larger engines and so to make them fit for continued service were turned down owing to doubts as to their strength if so fitted.

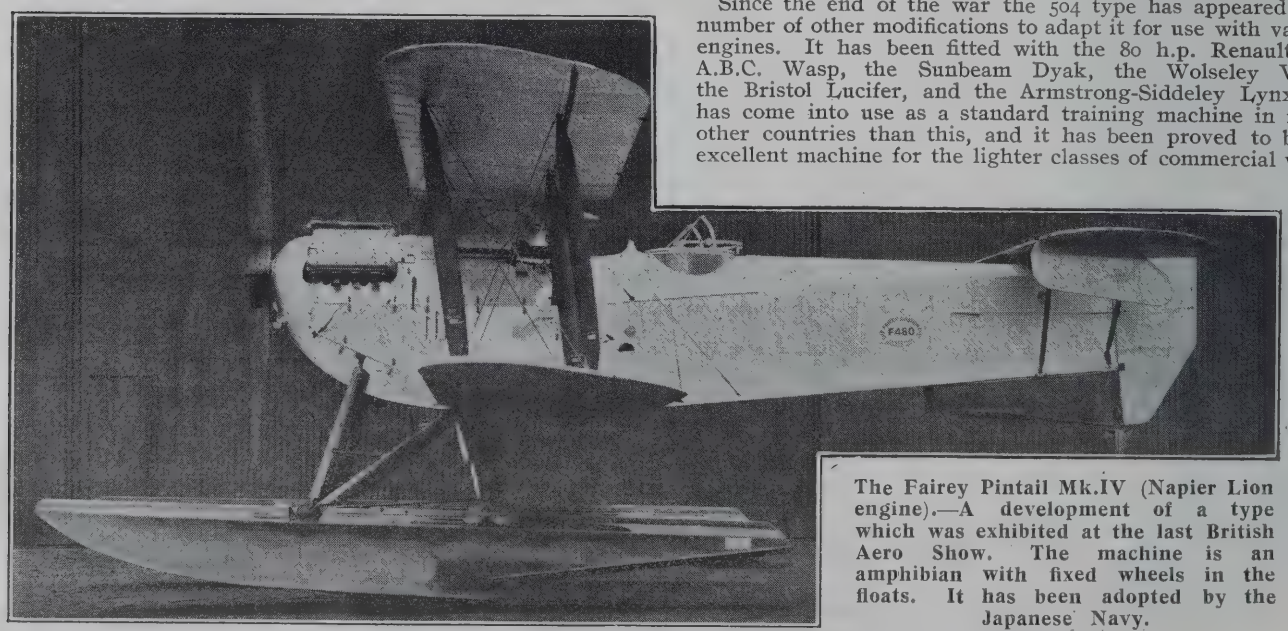
Although the Avro was then extensively for training purposes it was not the only machine so used. Generally pilots were first trained on Maurice Farmans, then on Avros, and finally on machines such as were employed in France.

It was not until Col. Smith-Barry came along and proved that the Avro could be used as the sole training machine, and that pilots properly taught on an Avro could go straight to the most difficult of scouts, that the real merit of the Avro was recognised and that it became the standard school machine.

It was rather remarkable that certain of the qualities which make the Avro 504 so suitable for training were qualities which they were well aware of and had regarded as defects. One of these was the fact that owing to its narrow undercarriage it was extremely liable to swing on the ground either getting-off or landing, owing to engine torque. Another was that it showed marked gyroscopic effects and engine torque effects in the air. All these defects were markedly present in the more tricky of the scout class—such as the Camel—and it was an advantage that the pupil should become accustomed to these characteristics right from the beginning.

During the earlier years of the war the 504 Avro was fitted with a variety of different engines, amongst them the 80 h.p. Gnôme, the 80 h.p. Le Rhône, a 150 h.p. Sunbeam, a 90 h.p. Curtiss. Finally, the Avro 504J with a 100 Mono-Gnôme was produced. This was the best of the wartime types, and it was the type chosen for the standard training programme. Unfortunately, it was found that as the 100 h.p. Mono-Gnôme was obsolete for fighting machines, the number of such engines available or on order was not sufficient to equip the necessary number of machines. Consequently it was decided that when the Mono-Gnôme was not available the 80 or 110 Le Rhône, or the 110 or 130 Clerget should be fitted. To make this possible the engine-mounting of the 504J had to be modified and arranged so that by the fitting of suitable adaptors any one of these engines could be fitted to the same machine. This modification of the 504J was the famous 504K, which was built in huge numbers, not only by A. V. Roe and Co., Ltd., but by nearly 20 other contractors.

Since the end of the war the 504 type has appeared in a number of other modifications to adapt it for use with various engines. It has been fitted with the 80 h.p. Renault, the A.B.C. Wasp, the Sunbeam Dyak, the Wolseley Viper, the Bristol Lucifer, and the Armstrong-Siddeley Lynx. It has come into use as a standard training machine in many other countries than this, and it has been proved to be an excellent machine for the lighter classes of commercial work.



The Fairey Pintail Mk.IV (Napier Lion engine).—A development of a type which was exhibited at the last British Aero Show. The machine is an amphibian with fixed wheels in the floats. It has been adopted by the Japanese Navy.

BRITISH ADC AIRCRAFT

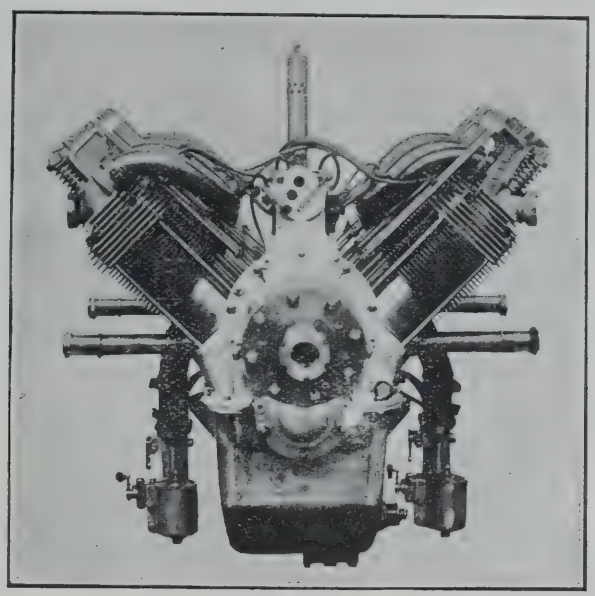
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BRIEF SPECIFICATION:

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V 90°	8	Air	120
Normal h.p.	**Maximum h.p.**	**Total Dry Weight.**	**Dry Weight per h.p.**
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It has been fitted as a seaplane, and has been equipped with two different types of oleo-rubber undercarriages, but in all its variants it has continued to prove an excellent flying machine—and looks like continuing to do so for a long time yet.

The Government and Engineers.

The Society of Technical Engineers has recently taken action with regard to the position adopted by the Air Ministry in offering salaries of £3 a week, plus Civil Service Bonus, to qualified engineers with the training of a University Degree and practical experience in works and drawing office. *The Engineer* and *Engineering* published letters of protest from the S.T.E. on the subject following their publication of the Air Ministry's advertisement. The Society also took the matter up with the Air Ministry direct, as well as drawing the attention of the Royal Aeronautical Society and the Institution of Aeronautical Engineers to it.

On Dec. 31 the Air Ministry sent the society a copy of its reply to a question asked in the House of Commons by Mr. H. G. Williams, as follows :—

MR. HERBERT WILLIAMS to ask the Secretary of State for Air, if he is prepared to reconsider the terms offered in an advertisement published in several engineering papers for an assistant engineer for the Royal Aircraft Establishment, Farnborough, namely, £3 a week and Civil Service bonus for a professional man with the degree of Bachelor of Science and several years' practical professional experience.

ANSWER : The terms in question are offered as a commencing salary only to Test Assistants, not to Assistant Engineers, and candidates who prove their worth have opportunities of early advancement to a higher rate of pay. I do not consider that in the circumstances they need revision.

The Society remarks :—" This is not a very frank answer on the part of the Air Ministry. Their reply to Mr. Williams suggests that the salary in question is offered only to very junior men, while the Farnborough advertisement shows that those taking up the posts must have had several years' practical engineering experience. The matter cannot be left where it is. The Institution of Aeronautical Engineers is moving with regard to it. By following up the question it is hoped that something may be done to bring about a more enlightened policy on the part of this Government Department."

The Cambridge University Aeronautical Society.

The programme of lectures to be given before the Cambridge University Aeronautical Society during the Lent Term, 1925, includes one to be given by Air Chief Marshal Sir Hugh Trenchard on Feb. 18. The subject will be announced later.

The other lectures for the term are as follows :—

Jan. 21.—Professor B. Melvill Jones, M.A., A.F.R.Ae.S., A.F.C., "Flying within the Clouds."

Jan. 28.—Professor L. Bairstow, F.R.S., C.B.E., "The Aerofoil : a Search for a Theory."

Feb. 4.—Wing Cdr. Sholto Douglas, M.C., D.F.C., R.A.F., "Air Fighting."

Feb. 11.—W. S. Farren, Esq., M.A., "The Process of Aeroplane Design."

Feb. 25.—H. Ricardo, Esq., M.A. (subject to be announced later).

Mar. 4.—Alan Chorlton, Esq. (of Wm. Beardmore and Co., Ltd.), "The All Steel Aircraft"

Mar. 11.—G. Bradshaw, Esq., "The Failure of the Petrol Engine as a Prime Mover." Presidential Address. Election of Officers.

Other events will include a visit to the airship R.33, an exhibition of trick flying and the showing of kinematograph films. These dates will be announced later.

New Technical Literature.

Aeronautical Research Committee, R. & M. No. 919.—The Effect of Wind Tunnel Interference on a Combination of Airscrew and Tractor Body. By C. H. N. Lock and H. Bateman. Price 9d. net.

R. & M. No. 920.—The Failure of a Nickel-Chrome Steel under Repeated Stresses of Various Ranges. By Prof. F. C. Lea and H. P. Budgen. Price 4d. net.

R. & M. No. 921.—The Effect of Gap between an Airscrew and a Tractor Body. By C. H. N. Lock and H. Bateman. Price 3d. net.

R. & M. No. 924.—Lateral Force and Moments on Avro Model. By R. G. Harris and A. S. Hartshorn. Price 6d. net.

A Dutch Contract for Britain.

A Technical Commission representing the Dutch Colonial Air Service has just placed an important contract with the Fairey Aviation Co., Ltd., of Hayes, Middlesex, for the supply of a quantity of III D. seaplanes (450 h.p. Napier Lion) for use by the Naval Air Service in the Dutch East Indies.

The order was placed after exhaustive tests with various types of aircraft, and the contract was obtained in competition with the whole World. One knows for a fact that during the tests of the III D. the chief engineer of the Dutch East Indies Air Service, who was conducting the tests, held up their progress for a considerable period awaiting a gale, so that he might observe the performance of the machine under extreme conditions.

The Fairey Aviation Co. deserve every congratulation on obtaining this order. The III D. seaplane, which first made its appearance in 1918, appears to improve with age. That it can still compete with and beat the World's best, shows that in spite of the neglect of the float seaplane in this country during the War 1914-18, England, and in particular the Fairey Aviation Co. still produces the best float seaplanes.

A Belgian Glide.

On Dec. 26, Lieut. Maurice Demblon, of the Belgian Army, who has been carrying out gliding experiments for some time, succeeded in remaining in the air for 37 mins. 7.4-5 secs. He took off from the Montague de Collanhan, and during his glide he passed over the village of Hébrouval.

This glide beats the previous best made in Belgium, and Lieut. Demblon proposes to make further tests, "assisted" by the official timekeepers of the Belgian Aero Club, with a view to attaching further records.

A Belgian Long-Distance Flight.

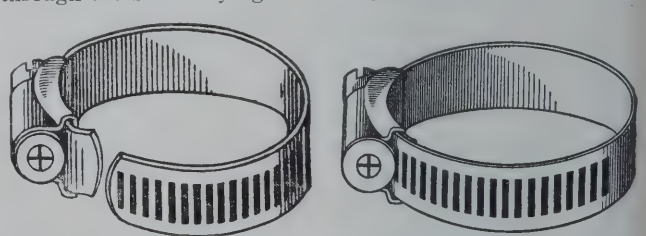
M. Thieffry, a well-known Belgian military aviator, is preparing to fly from Brussels to the Belgian Congo, the object of the flight being to take observations, on behalf of the Belgian Ministry of the Colonies, for the possible establishment of a Belgian postal line between these two countries. The route across the Sahara, blazed by the Citroën and Renault caterpillar automobiles, will be followed in so far as North Africa is concerned.

A New Hose Clip.

Everybody who has had any extensive dealings with petrol engines—for whatever purpose they may have been used—has felt the need of some form of hose clip a little less exasperating in its habits than the usual brass strip nut and bolt combination, which can rarely be taken off more than once or twice without becoming useless, and which can only be used on precisely the correct diameter of hose when the hose is fitted to a pipe of the right external diameter.

The Jubilee Worm-drive Clip, shown in two illustrations here, would seem to meet this need to at least a considerable extent. The clip consists of a mild steel strap, very thoroughly galvanised, which has formed in it a worm thread for some portion of its free length from one end. On the other end is clipped a stamped steel box carrying a screw so arranged that when the end of the strap is introduced into the box the threads of the screw engage in the threads in the strap itself. By turning the screw, therefore, the strap is tightened up.

The pull on the strap is therefore applied directly in the plane of the strap itself, and not through overhanging lugs which are in bending. The strap is in practically pure tension and tightening up does not tend to distort the strap, which is free to adapt itself to the contour of the hose. As the end of the strap with the threads is free to pass right through the box carrying the screw, the length of adjustment



available is limited only by the length of the threaded portion. These two qualities in conjunction make it possible to use a small number of sizes of clip for a large range of hose and pipe sizes. Four sizes cover a range from ⅞ to 3¼ inches in diameter. They also make it possible to tighten down a large hose onto a small pipe. For instance, a tight joint can be made between a piece of ordinary water-hose and a tube half-an-inch less in outside diameter than the hose bore. With the usual clip there is not enough range of adjustment to do this, and even if there were the hose would pucker at the gap in the clip. The new clip does not cause puckering—it contracts the hose uniformly.

It also adapts itself to the contour of a badly-distorted tube. Another useful quality is that two small clips can be joined end to end to form one large clip.

From inspection of this clip and from a few tests it would appear to be abnormally strong and suitable for prolonged use even in cases where frequent removal of the clip occurs. Efforts to strip or damage the threads by violent use of a screw-driver fail to produce any sign of failure of the threads—whereas with the usual hose clip such treatment would undoubtedly have led either to stripping the thread or to breaking of the lugs carrying the screw.

The Jubilee Clip is made by L. Robinson and Co., London Chambers, Gillingham, Kent.



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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 0; Tuesday, 0; Wednesday, 10, Thursday, 0; Friday, 0; Saturday, 2; Sunday, 0.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 5, passengers 8, freight 2 tons.

AIR UNION:
Paris—London: Machines 7, passengers 9, freight —.

K.L.M.
Amsterdam—Rotterdam—London: Machines 2, passengers 3.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 1, passengers 1.

Total number of trips by British machines: 5, carrying 8 passengers. Foreign machines: 7, carrying 9 passengers.

Comparative Figures:
For week ending Jan. 18:
Machines, 16; Passengers, 17; Crews, 16; Total personnel, 33.
Corresponding week, 1924:
Machines, 45; Passengers, 66; Crews, 70; Total personnel, 136.
Corresponding week, 1923:
Machines, 36; Passengers, 79; Crews, 63; Total personnel, 142.
Corresponding week, 1922:
Machines, 14; Passengers, 14; Crews, 21; Total personnel, 35.
Corresponding week, 1921:
Machines, 15; Passengers, 12; Crews, 17; Total personnel, 29.

Croydon Notes.

This has been an extremely bad week for the Air Lines. In fact it has been by far the worst of recent years. Only on Wednesday and Saturday was there any flying at all. On Wednesday three out of the five incoming machines were forced to land at Lympne and could not come unto Croydon until Saturday.

This state of affairs has been due to continuous fogs and low clouds on all the routes.

On Wednesday Mr. Geysendorfer left Amsterdam for Croydon on the new Fokker F.7. This is an improved version of Mr. Van der Hoop's Batavia machine. The machine is lighter by some 300 lbs. and faster, and the undercarriage is different. The interior of the cabin is tastefully appointed in washable grey paint.

Imperial Airways, Ltd., are taking over a Vickers Vulcan with a Napier engine. This is the type that competed in the 1923 King's Cup race, and so it can scarcely be called a novelty. Nevertheless it is an excellent machine for its purpose. It is easy to fly and has a low landing speed.

Sir Sefton Brancker's Tour.

Sir Sefton Brancker, who is engaged on a tour of the air route to the East, is at present ill with fever at Calcutta. He will continue his flight to Rangoon as soon as he is well. All will wish him an early recovery.

Formal Investigation into Croydon Air Accident

The Air Ministry announces that the Secretary of State for Air has directed a formal investigation of the accident at Croydon on Dec. 24, 1924, to the aircraft G-EBBX belonging to Imperial Airways, Limited, to be held under the Air Navigation (Investigation of Accidents) Regulations, 1922.

He has appointed Sir Arthur Colefax, K.B.E., K.C., to hold the investigation, and Professor B. M. Jones, A.F.C., Mond Professor of Aeronautical Engineering at Cambridge University, and Mr. James Swinburne, F.R.S., M.Inst.C.E., as assessors for the purposes of the investigation.

The Court will hold its first sitting at the Law Courts in Quadrangle Court A at 11 a.m. on Friday, Jan. 23. The investigation will be held in open Court.

Persons desirous of being heard by counsel or otherwise should attend at the first sitting of the Court.

The Inquest on the D.H.34.

The inquest on the eight people who were killed in the accident to the D.H.34 on Christmas Eve was resumed at Croydon on the 14th. Mr. Tristram Beresford represented Imperial Airways Ltd. Mr. Gilbert Beyfus who had previously represented Mrs. Stewart now appeared on behalf of Mr. Luxembourg who had previously been represented by his solicitor, Mr. J. W. Goldman. Mrs. Stewart was represented by Mr. Attale. Professor Bairstow was present as an independent expert at the coroner's request. It is understood that Mrs. Stewart is no longer anxious, in view of evidence, to pursue the management of Imperial Airways.

Proceedings opened by an address from Mr. Goldman to the coroner, suggesting that Imperial Airways had been tampering with one of the witnesses and that there had been an attempt to influence his evidence. The witness in question was Mr. Mervyn Henry, who is employed in the Traffic Department of Imperial Airways. At a previous hearing, a witness who had never been a pilot was asked to give evidence with regard to the control of an aeroplane in the air, a matter entirely outside his province and knowledge. The grounds for the alleged tampering was that Mr. Henry had been told to stick to the evidence appertaining to his Department and not to run wild on other subjects. Which seems to be very sound advice. Nobody seemed to wish to ask how Mr. Goldman and his associates got to know of the matter. The coroner stated that he certainly thought the evidence which had been brought as to tampering did not justify the allegation being made in any way.

After that, Mr. F. L. Barnard who was giving his evidence when the case was adjourned, was recalled. The coroner asked him if he ever had any special difficulty with the D.H.34 type of machine as compared with others, to which Mr. Barnard replied that every machine has its own particular idiosyncrasies. He added that to the best of his belief no radical alterations had been made to the D.H.34 since the accident. Actually he himself should have taken the machine which subsequently crashed, but as this was full and as he wished to take his wife with him as a passenger he had agreed with Mr. Stewart to change over machines.

Mr. Beyfus then made various suggestions to the effect that had Mr. Barnard refused to take a machine up when conditions were dangerous he might have lost his job with imperial Airways. Mr. Barnard very emphatically denied this. Anyone who knows Mr. Barnard will know how ridiculous such an assertion is. Mr. Beresford then stated that Mr. Beyfus, under the cloak of appearing for Mr. Luxembourg, desired to do as much harm as possible to Imperial Airways. He stated that there was a vendetta being worked against those who had the management of Imperial Airways in their hands.

Major James P. C. Cooper, Inspector of Accidents to the Air Ministry, said that he had completed his inspection of the engine.

The engine was remarkably little damaged by impact with the ground, and had not been subjected to sufficient heat to cause any of the aluminium parts to show signs of fusing. Both blades of the airscrew were broken off at the boss and the bolts of the hub were bent in such a manner as to indicate that the engine was running under power when it hit the ground.

All internal working parts of the engine were found to be adequately lubricated, and there were no signs of seizure or over-heating in any part. The lubricating system was free from any obstruction. The filters were clean and the oil pump together with the pressure and oil relief valves were in good working order.

All internal parts of the engine were in his opinion in good condition and no defect of any kind was found, except that the heads of two of the eight bolts securing the gear-wheel flange to the airscrew shaft were broken off and this in his opinion occurred when the engine struck the ground, as the gear-wheels were quite free and entirely undamaged.

The ignition system and wiring was completely destroyed by fire and the sparking plugs on the port side of the engine had been considerably heated but only three of the plugs failed to function satisfactorily when tested and two of these were from the rear cylinder port block.

The induction pipes at the union to the carburettor had been broken in the crash. It was obvious that the carburettors had been submerged in oil and water in the hole made in the ground by the engine. In spite of this no obstruction was found in any of the jets, no floats were punctured, and the petrol filter was clean except for slight corrosion due to the water referred to above.

His final conclusion was that no mechanical defect could have been the cause of the accident.

The inquest was then adjourned until Wednesday, Jan. 21.

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Hendon Aerodrome.

The Air Council have granted permission to the Royal Aero Club to use Hendon Aerodrome as the headquarters of the Light Aeroplane Section for a period of one year.

It is hoped on the best authority that flying will begin in April.

Permission has also been granted to the Club to hold a race meeting at the aerodrome soon after the R.A.F. Pageant, Exercises, Display, or what-not.

The Midland Aero Club.

The Midland Aero Club which was formed in 1909 has now been officially appointed by the Air Ministry as the authority for control of the Air Ministry Light Aeroplane Scheme in the Midland area. The Club is now being reorganised, and the Lord Mayor of Birmingham (Alderman P. Bower) has consented to become President. The following gentlemen have become Vice-Presidents :—Rt. Hon. Austen Chamberlain, Rt. Hon. Neville Chamberlain, Rt. Hon. Lt.-Col. L. C. S. Amery, Arthur Brampton, Esq., Sir Herbert Austin, K.B.E., Sir David Brooks, Sir Charles Hyde, W. Ballin Hinde, Esq., Sir Edward Iliffe, C.B.E., F. W. Lanchester, Esq., Sir Williams Mills, Francis H. Pepper, Esq., Alderman H. J. Sayer, J.P., Alderman T. O. Williams.

Since the War the Club has organised for the Royal Aero Club at Castle Bromwich controls in connection with the various long-distance races, such as the King's Cup and Grosvenor Cup. Since the advent of the Air Ministry Light Aeroplane Scheme the Club has received a large influx of new members, a large proportion of whom possess expert knowledge and experience gained in the Air Force, and it is expected that the Club will obtain very live and enthusiastic membership.

The annual subscription is fixed at £1 1s. for the first 500 members, after which there will be an entrance fee of £1 1s. Ladies and boys under 18 are admitted at a subscription of 10s. 6d.

The Club is in negotiation for the acquisition of machines and it is expected that negotiations at present in progress for the use of the Castle Bromwich Aerodrome with the consent of the Air Ministry, will materialise at an early date.

The Hon. Secretary is Mr. Gilbert Dennison, Handsworth, Birmingham.

The Berkshire Tours.

The Berkshire Aviation Tours still continue to do good work. On Sunday, Jan. 11, Messrs. Sparks and Parkinson made several trips at Sudbury in spite of the fog and later on in the day, the fog having dispersed, 170 passengers were taken up.

A Skilled Man.

Mr. J. W. Dumbrell, foreman of the Aviation Instrument Section at the factory of S. Smith and Sons, Cricklewood, has now left this concern. He is a highly skilled instrument maker and has held a position as foreman for some years and is an expert on aviation instruments. Anyone who requires the services of such a skilled worker as Mr. Dumbrell should apply to 32, Fentiman Road, Clapham Road, S.W.8. Mr. Dumbrell has left Smith's only because of the reorganisation of their factory control and this is no reflection whatever upon his efficiency as a worker. S. Smith and Sons will be pleased at any time to testify to his excellence as a worker.

PERSONAL NOTICES.

DEATHS.

ARMSTRONG.—On Jan. 15, at 5, Park Chase, Wembley, Alfred William Armstrong, late Lt. R.F.C. and R.A.F., the beloved husband of Rosa Armstrong.

BRUCE.—On Jan. 17, at Ramleh, Palestine, as the result of a flying accident, Ronald Reid Hardcastle Bruce, Flg. Off., No. 14 Sqdn., R.A.F.

McLAREN.—On Jan. 17, at Ismailia, Egypt, as the result of a flying accident, James Alexander McLaren, M.C., Flg. Off., No. 208 Sqdn., R.A.F.

FORTHCOMING MARRIAGE.

VIENER—KEATCH.—The marriage of the Rev. H. D. L. Viener, Chaplain-in-Chief, R.A.F., with Miss V. M. Keatch will take place very quietly on Feb. 23 at Christ Church, Mayfair, the Bishop of London officiating.

MARRIAGES.

BATEMAN—JOHNSON.—On Dec. 27, at Chelsea, Reginald Lee Bateman, R.A.F., to Vera Mary, younger daughter of the late Mr. and Mrs. William Johnson. Brazilian papers, please copy.

TITMAS—YOUNG.—On Jan. 10, at St. Paul's Church, Upper Norwood, John Francis Titmas, R.A.F., to Doris Maude Young.

BIRTHS.

FERRIER.—On Jan. 3, at Ottawa, to the wife of Alan Ferrier, M.C., Royal Canadian Air Force—a daughter.

GRINNELL-MILNE.—On Jan. 13, the wife of Flt. Lt. Duncan Grinnell-Milne, M.C., D.F.C., of 5, Rue Georgesville, Paris—a son.

JOHNSON.—On Jan. 12, at Cumnor Vicarage, Oxford, to Phyllis, the wife of F. R. Johnson, D.F.C., Cachar, India—a son.

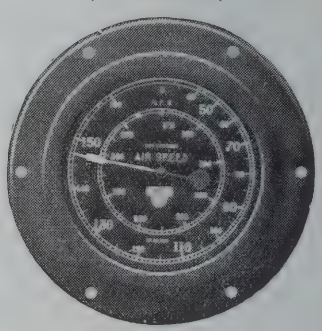
WRIGHT.—At "Hermosa," Teignmouth, Devon, on Jan. 2, to Elsie, wife of Sq. Ldr. A. Claud Wright, R.A.F.—a son

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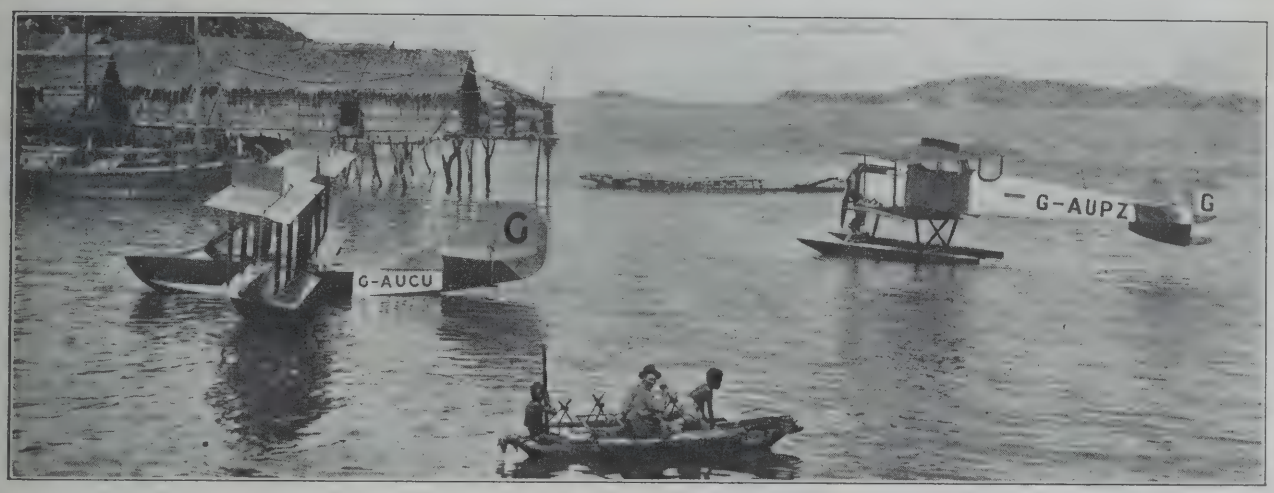
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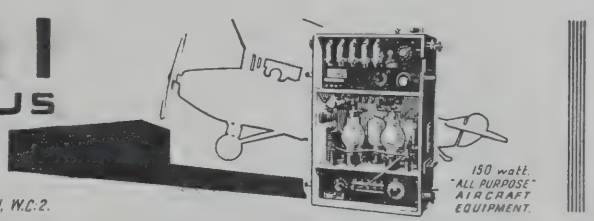
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ANCIENT AND MODERN.



TWO METHODS OF TRANSPORT.—An ancient Curtiss flying boat and a Short "Shrimp" Seaplane (Siddeley Puma engine) belonging to Capt. Hurley's expedition moored off Elavala, New Guinea. The ancient catamaran method of transport shown in the foreground is still the most usual in these districts.

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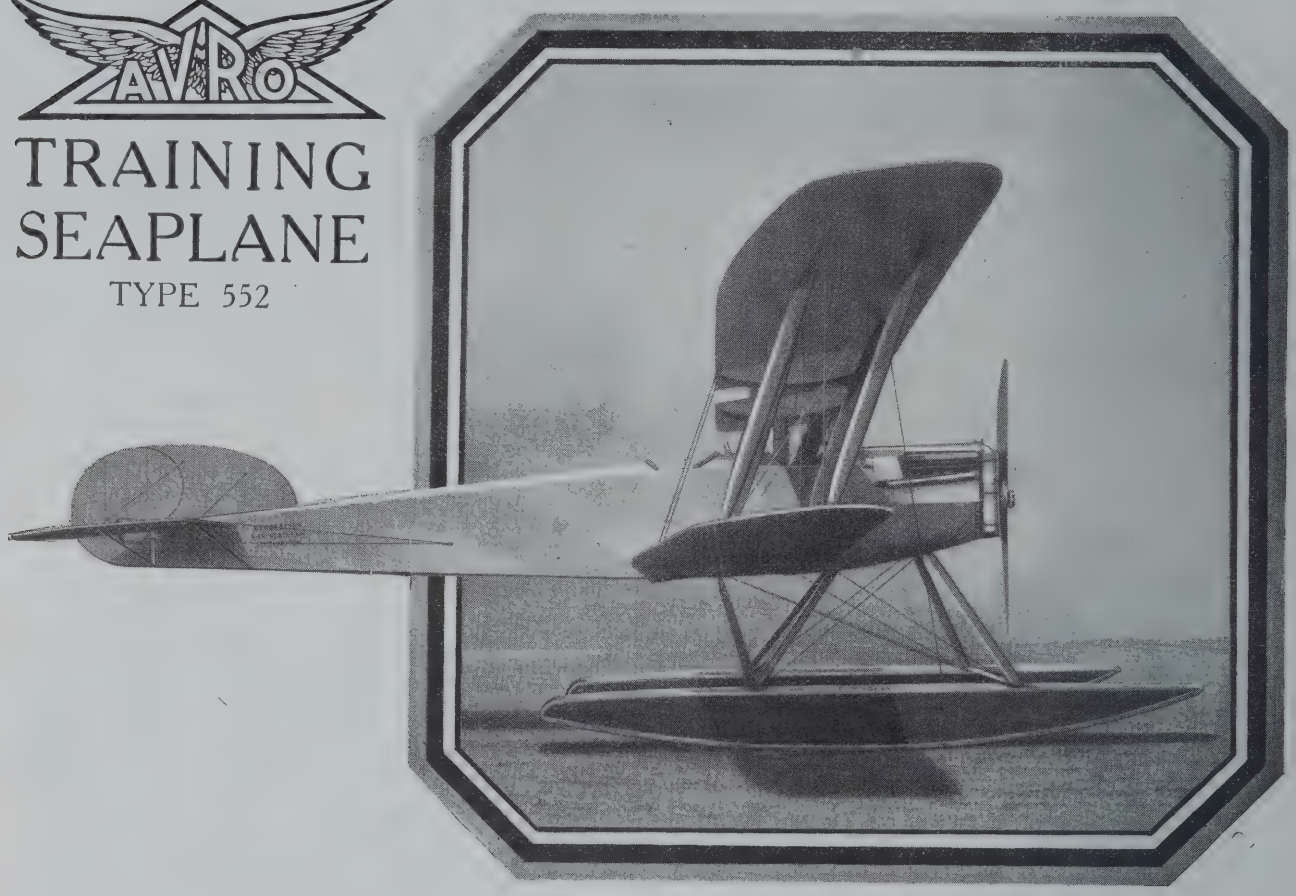
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ON THE OUTLOOK.—IV.

AIR POWER.

We may now turn to the more legitimate function of this paper, the discussion of the outlook as it concerns our Air Power.

During the past few years the Air Staff has given its chief attention to producing an Air Force which shall be capable of using aircraft properly. We have all lamented the scarcity of respectable modern aeroplanes, and the absence of orders for the Aircraft Industry. But undoubtedly the Staff was wise in its policy.

There was no use in having lots of aeroplanes when there were no mechanics to keep them in flying order and no trained staff officers to direct operations and handle supplies. So the Air Staff spent its money on training mechanics and on housing them properly and on spreading the understanding of staff-work. Now at last we have the mechanics and the pilots and quite a respectable number of competent staff officers. We need many more, but the provision of further supplies of trained officers and men has been put on what an engineer would call a "production basis."

Consequently the Air Staff has during the past year turned its attention to acquiring new aircraft to replace the quaint old war-machines of 1916-17 design with which the R.A.F. has been doing all its work for the past seven years. And it is just here that the outlook is less bright than it is in other directions.

Strictly speaking the Air Staff is not responsible for the acquisition of aircraft. That is the province of the Department of Supply and Research. The Staff tells the Air Council that it wants machines for certain purposes and the Council authorises the Supply Department to get them.

It is precisely in this that the Air Staff has met its most difficult problems. And on the whole it has solved them satisfactorily so far as it has gone. But there are many more to be met before our Air Power is established on a firm basis.

Naval Obstacles.

The chief obstacle to the development of Air Power, as this paper has so often explained, has been the Navy. Apart from the Navy's absorbing most of the money voted for the defence of the Empire, a certain faction at the Admiralty has never ceased to intrigue for the handing over of all sea-going air work to Naval control. And these intrigues have complicated immensely the provision of aircraft for the R.A.F.

One of the first of the Navy's attacks on the Air Force was based on the cry that the Fleet was being neglected. It was alleged that the Air Ministry was spending money on bricks and mortar (for very good reasons, as one has stated above) and that the Fleet—which had consistently despised aircraft during the War 1914-18—was being left without the air strength necessary for its protection against submarines and for the direction of its gunnery and for scouting for enemy fleets.

To forestall these charges the Air Staff for the three financial years 1922-23-24 spent almost all the money which it could spare for new machines on experiments with and then on the supply of sea-going aeroplanes. The result was that, when the Admiralty made its public attack on the Air Ministry, the Air Staff was able to defeat the Navy by showing that it had far more machines for Naval work than the Fleet could possibly accommodate, either as auxiliaries co-operating from shore bases or as an integral part of the Fleet working from aircraft-carrying ships.

Even to-day all the Navy's aircraft-carriers allowed under the Washington agreement could only house a fraction of the number of aircraft which the Air Ministry has ready to embark in them. Thus, on this point the Navy has been utterly defeated.

But the result has been that those units of the R.A.F. which have been steadily at war in Iraq and on the Afghan Frontier (which is *not* in fact the Indian Frontier at all) ever since 1918 are still doing their work with antiquated machines of types which, as a matter of history, first crossed enemy lines at Easter 1917.

Personnel Under the Navy.

Having been defeated on this point the Admiralty then set up a new cry. The Navy invented the epithet "The Fleet Air Arm"—which really means the old Royal Naval Air Service camouflaged for the time being—and lamented that this Arm was manned by officers and men who were neither in nor of the Navy.

By exercising all its pull and influence the Admiralty succeeded in securing an arrangement by which officers of the Navy are being trained as pilots and observers by the R.A.F. with the ultimate object of appointing them to the Fleet Air Arm in place of R.A.F. personnel, till only a small percentage of R.A.F. people are to be left.

Now nobody questions the bravery or loyalty of Naval Officers. But many people question their intelligence. And those who work at the R.A.F. schools of flying where the Navy folk are being trained do not even question it: they just know.

In the kindness of their hearts the R.A.F. explain the Naval man's inability to find an aerodrome of several hundreds of acres extent, and his difficulty in putting an aeroplane into it safely if he discovers it accidentally, by the fact that sailor-folk are used to the boundless ocean for manœuvres, and find their way ashore by "swinging the lead"—or whatever they call it. Neither of which conditions exist commonly in the R.A.F.

Others of less kindly nature talk of Naval Officers as being solid ivory from the eyes up, except for a clean hole drilled from ear to ear,—a detail of design which makes instruction in the art of flying and air navigation somewhat difficult.

Personally one has found some Naval Officers quite intelligent. But as a rule these have been singularly unpopular in the Navy, where the system of education does not tend to develop deep thought.

In any case the fact remains that taking them bye and large those officers who have been caught young and brought up in the Navy do not show much promise as aviators. And if the operation of aircraft over-seas is to be entrusted to them the outlook is not very bright.

Admiralty Control.

Still less bright is the outlook for our Air Power in the outposts of the British Empire if it is to be entrusted to the Admiralty.

The whole history of the Admiralty during the War 1914-18 is one of lamentable failure. The incompetence of the Admiralty Staff was such that this country only just escaped starvation through the bravery and ability of the German Submarine Service, although the proper use of Naval aircraft would have made the submarine menace practically negligible.

Yet it is to those very people that we are asked to commit the handling of all our aircraft overseas in the next war. For it must be remembered that the Admiralty's latest intrigue, as exposed in this paper a few weeks ago, aims at securing control not only of the Fleet Air Arm but of all the air patrols of our shipping routes and of home waters as well.

Those people of the R.A.F. who are condemned for their sins to work under the Navy in what is euphemistically called Naval Co-operation units know what to expect if and when the Admiralty does acquire control of sea-going aircraft. On all sides one hears of applications for transfer to R.A.F. units in India or in Iraq or in Egypt or in the Home Defence Area or in the Army Co-operation scheme. Any transfer is good enough so long as it means getting away from the Navy and its atmosphere.

There are a few, very few, people in the R.A.F. who would like to go back to the Navy. But the vast majority of those who are serving under the Navy long to get free from its blighting influence. They know that if once the Admiralty gets its way their lot, as a minute minority in the Fleet Air Arm, will be worse than that of the Marines. And if anybody can find a more soured and disappointed man than the average officer of the Royal Marines at forty years of age or over, then he has discovered an ethnological curiosity.

A Matter of Faith.

On the face of it the simplest policy would be for the Air Council to throw in its hand and let the Navy have its

own Fleet Air Arm or Naval Air Service all to itself and to withdraw all R.A.F. personnel from all Naval Co-operation. Thus the Admiralty would be left completely in the air with nothing to attack, exactly as the British Army was left in the air when Marshal von Hindenburg suddenly retired in the spring of 1917 and left twenty miles or more of devastated country between his lines and ours, or as the Chief of the Air Staff suddenly retired from office under Lord Rothermere in the spring of 1918 and left the Harmsworth Press with nothing to attack.

There are many people in the R.A.F., from the highest to the lowest ranks, who cannot understand why such successful strategy is not repeated. One's personal advice to all such is to put their trust in the Air Staff and have faith in the future.

One has no ideas whatever as to the policy of those who have been set in authority over the Air Force, but just as there are more ways of killing a cat than by choking it with cream so there are more ways than one of winning a Pyrrhic victory. A Parthian shot may be more deadly than a direct attack. And, besides, the withdrawal from Gallipoli—which was a brilliant piece of strategy the value of which will be recognised by future historians—was not effected in the same way as was von Hindenburg's retirement.

Therefore one is content to watch events with quiet amusement and see how they all fit into the Great Scheme. Happily one believes in direct inspiration. And one believes that our Air Power all over the World is quite safe in the hands of those to whom it has been committed.

Air Power in the Far East.

Just as an indication of how future events may develop one directs attention to the following extracts from *The Daily Telegraph* of January the 23rd, written by the Parliamentary Correspondent of that distinguished paper :—

> There is full authority for saying that the Government has not yet come to any decision regarding the use to be made of Singapore as an air station. The original plans for the creation of a naval base in the Pacific included the provision of an aerodrome, but the whole question is now being examined afresh, and, while the Cabinet has decided to proceed with the construction of the naval works, there may, it is gathered, be considerable variations from the programme as first drafted.
>
> So far from there being any intention to proceed to establish immediately, or even in the near future, an important air base at Singapore, there is reason to believe that two years, or even more, will elapse before it becomes a station of the Royal Air Force, and that the strength of the Air Force to be maintained in the Pacific will not be determined for a long while to come.
>
> As a matter of fact, when the Air Estimates are issued in March, it will be found that not a single penny of expenditure is included for Singapore, and this will afford confirmation of the statement now made that the Air Staff does not contemplate doing anything there until, at any rate, after March, 1926.
>
> With respect to the naval base, the sum of money the House of Commons will be asked to vote for operations during the coming financial year will be comparatively small. It is understood that the Cabinet has not yet come to a decision as to the length of time over which the work will be spread, but there is every probability that the former plan for finishing the construction of the base in ten years will be scrapped, and that the period of time allotted for the completion of the enterprise will be considerably extended.

That statement is eminently satisfactory. It will be seen that the Admiralty is *not* going to be allowed to fling millions into a dock of record size; to be bombed to bits by Japanese aircraft at the outbreak of war. And apparently the Air Ministry is not going to rush into a scheme for a huge air base to which the R.A.F. would be tied by the need for defending the Navy's futile dock.

In due course Singapore will have one of the biggest aerodromes in the World. As the Key to the Far East it must be so. But the time is not yet.

The Beginning of Progress.

Everybody in the East knows what nobody in this country has yet been told (on the good old principle of a secret known to everybody but ourselves), namely that his Majesty's aircraft-carrier *Pegasus* has been at Singapore for many months with a number of Napier-engined Fairey III D. float seaplanes on board. During those months the seaplanes have made a complete photographic survey of all the country for miles round Singapore. On the strength of that survey and the other information gathered by the *Pegasus* as to flying conditions in the Far East the Air Council will be able to lay proper plans for future air strategy and tactics.

It is satisfactory to know that during the whole of the time no trouble has happened to either the seaplanes or their motors. Which goes to prove that we have, even now, the right material for hard service in the worst tropical sea-going conditions.

And, as the work was purely an R.A.F. job,—the Navy fulfilling its proper function as a transport Service—we may assume that the Air Staff will also acquire much information which will be of value when in due course it has to take full command of war operations in the area which should be limited on the Westward side by the patrol line from Singapore to Port Darwin, no matter how far it may extend as the tide of victory for the White Race sweeps Eastward. So here also the outlook for our Air Power is satisfactory.

(To be continued.)

Aircraft Developments in Greece.

[The following account of the progress of aviation in Greece has been written by Mr. David Longden, Joint Managing Director of the Gloucestershire Aircraft Co., Ltd. He has kindly permitted The Aeroplane to publish his observations for the benefit of all concerned with British Aviation.—C. G. G.]

It was rather by force of circumstance than by choice that I found myself a few weeks ago at Marseilles, boarding the s.s. *Andros*, of the Greek National Navigation Company, bound for Piræus the port of Athens. Her meagre tonnage (little over 2,000) scared me, but the Simplon-Orient had been booked up weeks ahead and no other boat was available.

I was prepared for an uncomfortable trip. But five days aboard the s.s. *Andros* was a pleasant disillusionment which surprised me no less than the evidence of progress which I was to observe at Athens. True, I occupied one of but two *cabines de luxe* which the boat possessed, but she was remarkably steady, British-born, and the food she served up for me left nothing to be desired. It included excellent wine of the country. I cannot in fact refrain from recommending both the ship and her crew to any would-be pilgrim to the shrine of Athena.

Ten years of intermittent warfare might have been calculated to have placed Greece in a backwater for some years to come. But when one visits Athens to-day one sees no signs of stagnation or exhaustion. The city is alive and if there is one thing more than another which impresses one (apart of course from the sublime Acropolis) it is the evident wealth of man-power and money. The population of Athens has of course been considerably augmented by the exchanged population from Turkish Territory, and I imagine that together with Piræus, which will soon be a suburb of Athens, the capital must number well nigh a million souls.

Poverty is apparent amongst some of the refugees but otherwise the city wears an aspect of opulence. Luxurious motor-cars, principally French and American, abound. One Rolls-Royce is to be seen in splendid isolation. Roads leave much to be desired but there is evidence that an improvement is to be made in this direction.

There is a new spirit abroad in Greece to-day, a spirit which breathes progress. During the past few years governments have risen and fallen with meteoric suddenness, and the Athenian has lived continually on the brink of a volcano. Contending political factions have made government in any continuous sense impossible, with the result that public works of serious urgency have been sadly neglected. But with the advent to power of the present Coalition Government under the able leadership of M. Michalocopoulos a new era appears to have opened which one hopes will put an end to party faction and enable the Government to get down to serious work.

They have already several important accomplishments to their credit. The Refugee Loan has been floated with astonishing success; a concession has been granted to an American firm for the water supply of Athens, an urgent and long-delayed need; and last but not least to those interested in aircraft, a British aircraft firm is at present negotiating with the Greek Government for the organisation and running of the Aircraft Factory at Phaleron Bay.

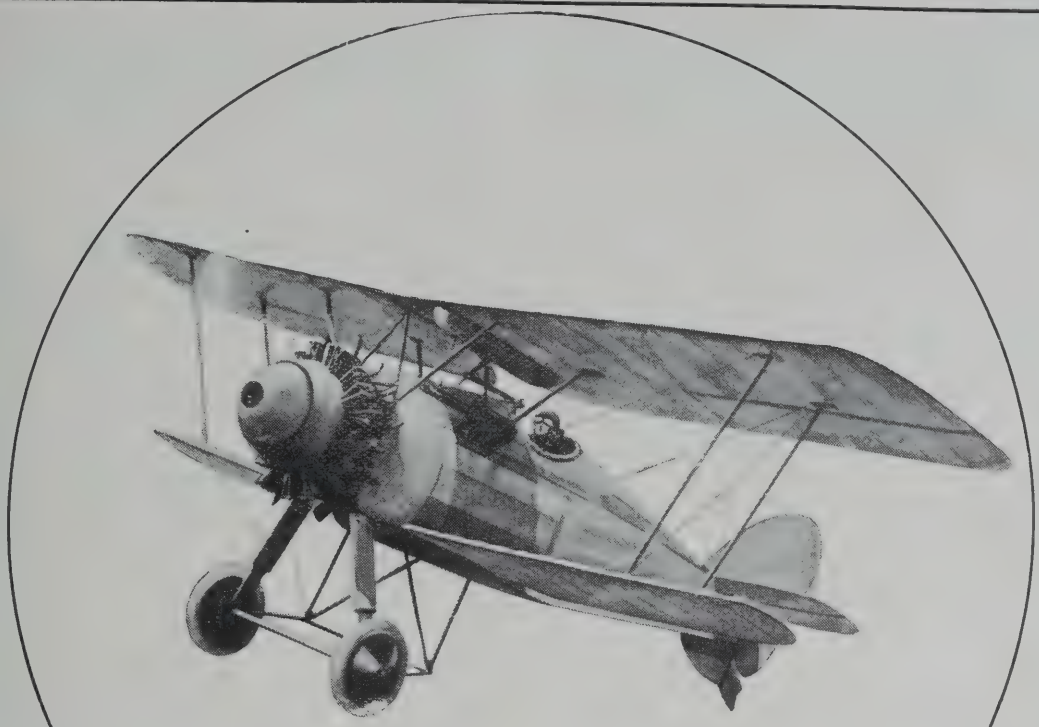
It is a matter of considerable satisfaction that in a quarter of Europe where French interests have become increasingly predominant since the War, the organisation of this factory is to be placed in British hands.

The factory was built and equipped in 1920 under the supervision of Admiral Kelly at a cost of over £100,000, but disturbed political conditions have never allowed of its exploitation until now. It is well constructed on up-to-date lines, and if efficiently organised should prove a valuable asset for the aerial defence of Greece.

Much depends on the adaptability of Greek labour to the new industry. Greek carpenters and joiners reach a high level of workmanship, and if a similar level can be attained in the other branches of the industry, it should mean the establishment of a new national industry. Greek labour too is very much cheaper than in this country.

The factory is situated on the delightful Bay of Phaleron in the vicinity of the Naval Seaplane Station. In rear of the factory is an extensive area belonging to the Government which is to be cleared and converted into an aerodrome. There will therefore be facilities at hand for testing both land and sea types.

The Bay of Phaleron affords ideal conditions for seaplane work. The water in the roughest of weathers is never



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

seriously troubled. For aerial transport services this is bound to become an important station.

The aerial arms of both the Army and the Navy have inevitably suffered some neglect from the political disturbances of recent years, and both services need re-equipment if they are to afford adequate protection for the growing interests of modern Greece.

Glo'ster Mars VI machines, with Jaguar engines, still do valiant service in the military arm after nearly three years' regular wear and tear. It speaks well not only for the quality of those machines but also for the quality of the Greek pilots in handling them, that the majority of the machines are still in service. This is no less true of the D.H.9s in use by the Navy, which has some excellent pilots who are well represented by the Naval Commission which came over to England early last year.

Greece is shortly to be included in the network of European aerial transport lines. The Government have entered into an agreement with the Societa Anonima Aero-Espresso Italiana for the establishment of a commercial air line between Italy, Greece and Turkey. The line is to run from Brindisi to Athens (Phaleron Bay) and Constantinople, via Lemnos and is expected to be opened about May this year.

A similar agreement has been made with a French concern for a line from Marseilles to Athens, but difficulties have arisen in securing facilities for traversing Italian territory, and it is not yet possible to indicate when this service will be initiated.

Here, as elsewhere on the Continent, the principal air lines are rapidly being absorbed by foreign companies. No British concern has appeared on the field up to the present, although I have every reason to believe that such a line would be welcomed. The absorption by France, Italy and Germany of the principal airways of Europe is bound to handicap British interests sooner or later. It is to be hoped that something will be done in the near future to remedy this.

Greece is a country with an illustrious past, a past so illustrious as to overshadow the efforts of that country to-day. But to compare the Greece of to-day with ancient Greece is to do scant justice to our contemporaries. The refugee problem alone would probably have confounded Pericles, yet the handling of it by Greece has shown remarkable resource.

One hopes that a long period of political tranquility and prosperous development lies before the Greek people, and one wishes them every success in the establishment of an Aircraft Industry under British guidance and supervision.

Exploring by Seaplane.

From time to time one hears of expeditions of exploration in which aircraft are intended to be used, but on very few occasions is it found that the aeroplane has performed more than a minor rôle and seldom has any permanent record been obtained showing aircraft actually engaged in probing out what little is left of the unknown of this World.

Capt. Frank Hurley, explorer and photographer, who has spent a considerable portion of his life on expeditions into the unknown tropics, has, on his last two trips into New Guinea, brought back a very complete cinema and photographic record of his wanderings. On these two journeys he had with him a Short Shrimp seaplane and a Curtiss Seagull flying boat, and although both these aircraft suffered severely from the effects of the tropical sun it can safely be said that they took a prominent part in the making of the film.

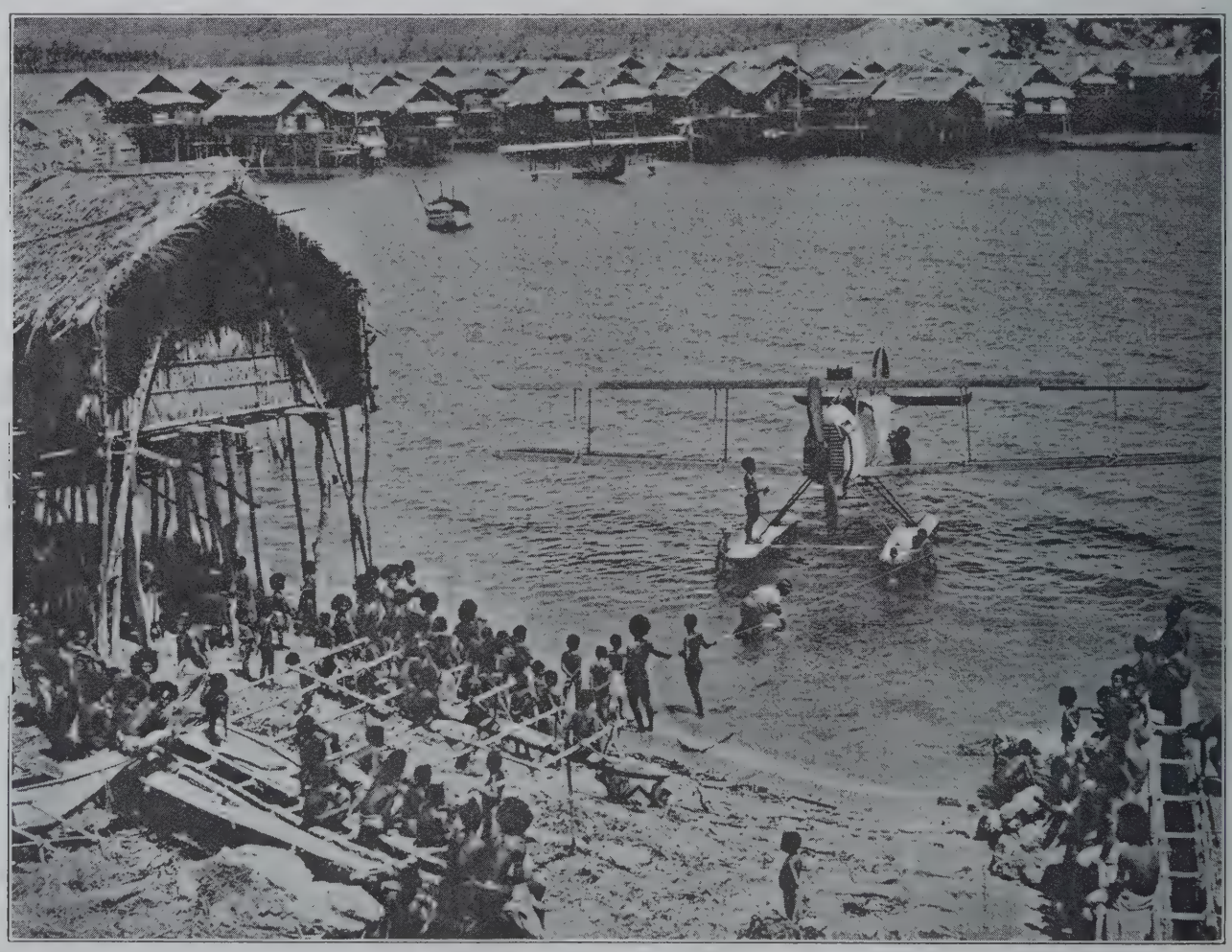
The Shrimp more nearly approached the ideal than the Seagull but owing to consistent trouble with the wooden floats its sphere of usefulness was considerably curtailed. Nevertheless its performance in the air was exceedingly good, and had it been fitted with all-metal floats there is no doubt that considerably more work would have been accomplished.

The Seagull, from which a majority of the aerial photography shown in the film was taken, was inefficient, but in spite of this it held together and enabled photography to be done for the duration of the expedition. Also it returned by air from New Guinea to the mainland of Australia.

Owing to tropical conditions its ceiling never rose above three figures and the time to take off varied from one to four miles, a feature that made the getting off from winding and uncharted rivers a risky and adventurous pastime.

Apart from the aeronautical interest in the film, which has recently been shown at the Polytechnic Cinema Theatre, Regent Street, W., under the title "Pearls and Savages," the film is one of the most fascinating of the travel type that has been shown in London.

Numerous colour slides are shown. Gramophone records



CAPT. HURLEY'S EXPEDITION.—The "Fleetwings" and "Seagull" moored off Elavala New Guinea.

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were obtained of the native songs, chants and dances, and these, transposed into readable music, are played by the orchestra. Throughout the entire showing of the film Capt. Hurley describes his adventures in a highly educative, humorous and breezy chat. For one so ill-supplied with journalistic superlatives, an adequate eulogy of this film is impossible.

As a cinematograph display, "Pearls and Savages" is unique. As the film is to be withdrawn this week, after a three-months' run, one honestly advises all who are within easy reach of regent Street to make a point of going there as soon as possible.

The Inquiry on the D.H.34.

The first official inquiry ordered to be held in a public court under the Air Navigation (Investigation of Accidents) Regulation, 1922, was opened on Friday, Jan. 23, at the Law Courts, in order to inquire into the cause of the accident on Christmas eve to G-EBBX resulting in the death of the pilot and seven passengers.

Sir Arthur Colefax is President of the Court and Professor B. M. Jones, A.F.C., Mond Professor of Aeronautical Engineering at Cambridge University, and Mr. James Swinburne, F.R.S., M.Inst.C.E., are acting as assessors for the purpose of the investigation.

Counsel appearing are Mr. H. M. Giveen and Mr. W. Trevor Watson (instructed by the Treasury Solicitor) for the Air Ministry; Mr. Hunter Gray, K.C., and Mr. Tristram Beresford, for Imperial Airways, Ltd.; Mr. Gilbert Beyfus and Mr. T. A. J. Wolfe (instructed by Messrs. I. Goldman and Sons) for the relatives of the late Mr. Luxemborg; Mr. Gilbert Stone for the de Havilland Aircraft Co., Ltd.; and Mr. J. R. Macdonald (instructed by Messrs Joynson-Hicks and Co.), representing the British Federation of Air Pilots.

Technical information given by officials of the Air Ministry as to the registration and certification of the machine concerning its airworthiness, was quite satisfactory.

Major Cooper, Inspector of Accidents, confirmed the statements as to the airworthiness of the machine, and stated that he had found on investigation that the engine was only slightly damaged by the fire. All the internal working parts of the engine appeared to be adequately lubricated, and there was no sign of overheating in any part.

As to the condition of the petrol feed pipe it was found that at a distance of about 10 inches from the filter union the internal gut-lining of the Petroflex piping was swollen. This piece of pipe was damaged by fire, but where the swelling of the gut was most marked the pipe bore no evidence of being burnt. After discussing whether this swollen pipe might have any direct connection with the cause of the accident, the Court adjourned until the following morning.

On Saturday the inquiry was resumed and in reply to the Chairman Major Cooper stated that in his opinion the most probable cause of the accident was partial failure of the engine. It was quite clear that the obstruction in the petrol pipe was at the lowest point where water was likely to accumulate, and it was certain that water was the cause of the swelling such as had been found.

The question raised previously concerning the down-draught over the hill to the south of the Aerodrome, could not affect the question as it has been proved that the machine had passed beyond the effect of that.

Thereafter followed certain questions raised by Mr. Beyfus with regard to the previous inspection of the craft.

In answer to a question put by Mr. Watson asking whether there was any useful indication he could give that the machine when he examined it had had other than proper attention, maintenance and upkeep, Major Cooper said that the tyres were clean and that was all there was left.

The Court was adjourned until 10.00 hours on Tuesday morning.

The R.N. and the U.S. World Flight.

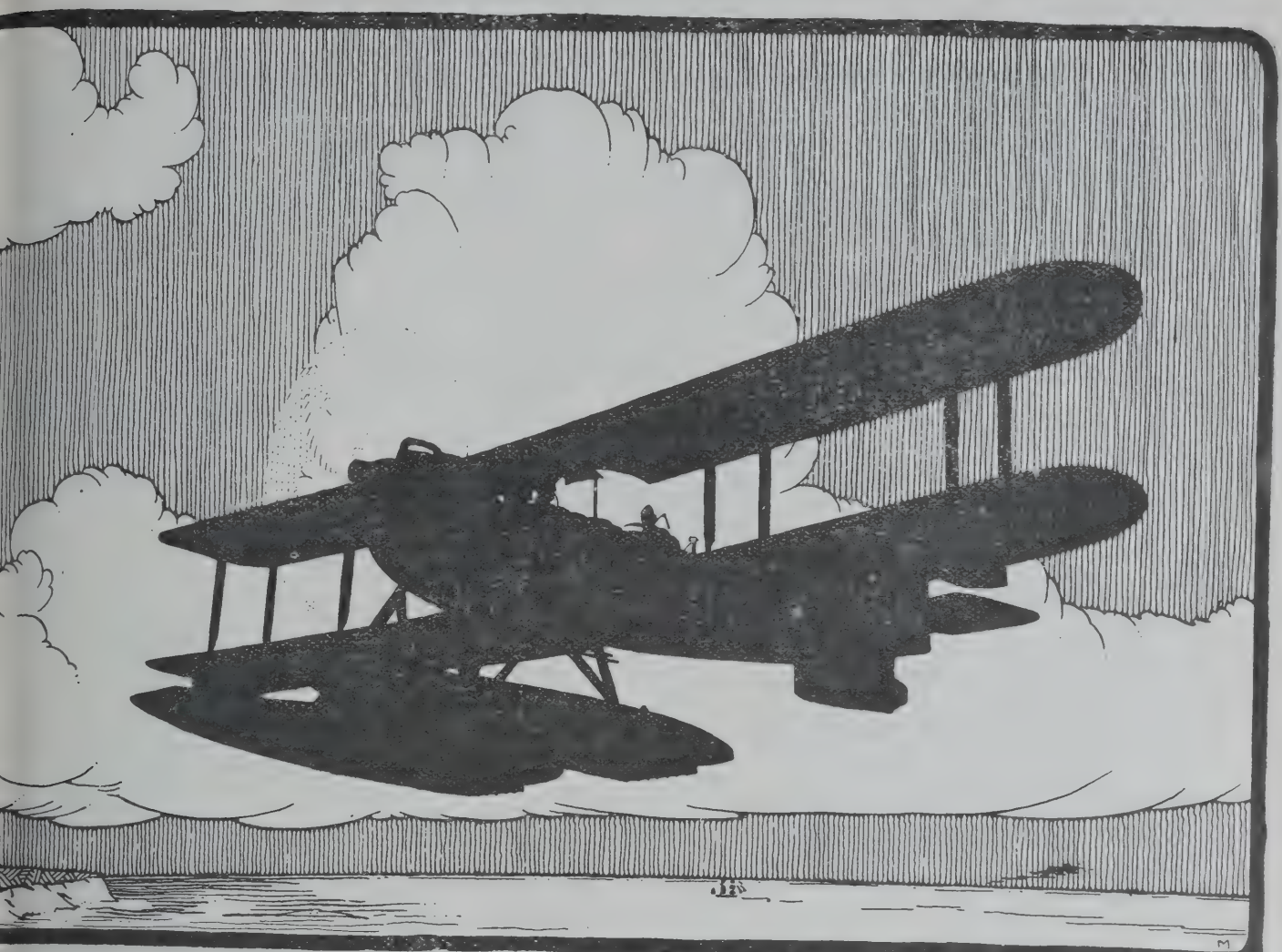
The *Times* of Jan. 5 states :—The following message from the United States Ambassador in London to Mr. Austen Chamberlain appears in current Fleet Orders :—

Under instructions from my Government, I have the honour to express the deep appreciation of the American Government for the many courtesies and assistance extended by the British authorities to the American aviators in their recent flight around the world. The American Government fully realises that without the co-operation of the various foreign Governments over whose territory the flight passed this achievement would not have been possible, and it is therefore particularly happy to express its gratitude to his Majesty's Government for its cordial co-operation.

[One was under the impression that the Royal Air Force in India and Iraq assisted modestly in this affair. If any notification of similar kind appeared in Air Ministry Weekly Orders it has been carefully hidden from the public eye. The Silent Service is ever in evidence.—Ed.]



CAPT. HURLEY'S EXPEDITION.—The arrival of the Short "Shrimp" seaplane at Port Moresby, Papua. Natives arrived from far and near in decorated war catamarans. Port Moresby was the starting point of the expedition.



A silhouette of the FAIREY III D SEAPLANE.

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THE ROYAL AIR FORCE.

The London Gazette.

Jan. 20.

General Duties Branch.—The following Cadets are granted perm. comns. as Pilot Officers, having successfully passed through the R.A.F. Cadet College, with effect from, and with seniority of, Dec. 17, 1924:—A. H. W. J. Cocks, G. B. Beardsworth, J. H. M. Campbell, N. S. Allinson, S. H. Hardy, G. R. Beamish, G. W. Hayes, S. H. V. Harris, I. M. Scott, A. H. Montgomery, P. R. Gardner, Earl of Bandon, J. G. Franks, J. R. Addams, R. J. A. Ford, M. E. de L. Hayes, P. M. Terry, G. F. G. Cox.

The following are granted perm. comns. as Flt. Lts. (Jan. 21):—O. E. Carter, R. J. Divers, M.B.E.

The following are granted temporary comns. as Flg. Offs. on attachment to the R.A.F. for four years (Jan. 12):—Lts., R.N.—L. C. Sharman, T. O Bulteel, R. J. Berry, A. N. Grey, K. A. B. Hutson, P. J. Fitzgerald, R. C. Allen, A. P. Colthurst, D. B. Morgan, J. N. Sparks, R. A. Aldridge, G. F. Renwick, R. H. Langton, E. W. E. Lane, J. W. M. Healing, F. G. Wynne, T. H. Villiers, G. H. Birley, A. A. Murray, J. F. Vallance, and F. H. G. Oliphant. Sub-Lts., R.N.—E. O. F. Price, and G. Willoughby. Mate, R.N.—J. Ryan. Lts., R.M.—R. H. S. Teek, A. B. Woodhall, C. J. Fell, T. L. G. Bryan, C. F. L. Holford, and O. C. Jones.

The following Plt. Offs. are promoted to the rank of Flg. Off.:—R. H. Giles (Dec. 14, 1924); R. H. Bibby (Jan. 14). Flt. Lt. L. W. Jarvis is restored to full pay from half-pay (Dec. 29, 1924).

Flg. Off. H. A. Mullaly (Lt., Indian Army, retd.) is cashiered the service by sentence of General Court Martial (Jan. 8). Flg. Off. C. P. Wingfield relinquishes his S.S. comn. on account of ill-health and is permitted to retain his rank (Jan. 21). Plt. Off. G. D. Hamilton resigns his S.S. comn. (Jan. 14). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—A. J. McKellar (Jan. 10); K. W. James (Jan. 21).

The following Flg. Offs. relinquish their temporary comns. on return to Army duty:—H. A. R. Puttee (Jan. 15); A. S. Godley (Jan. 17).

Stores Branch.—Flt. Lt. G C. Anne, O.B.E. (Capt., K.O.Y.L.I.) is granted a permn. comn. (Jan. 21); the seniority of Flg. Off. R. V. Robinson, O.B.E., is April 1, 1918, not as stated in the *Gazette* of April 29, 1924.

Medical Branch.—J. M. Kilpatrick, M.B., is granted a S.S. comn. as a Flg. Off., with effect from, and with seniority of, Jan. 7, Lt. V. P. Ellis, L.D.S., Dental Surgeon, General List, Army, is granted a temporary comn. as a Flg. Off.

Reserve of Air Force Officers.—The following are granted comns. on probation in the General Duties Branch in the ranks stated (Jan. 20):—Class A.—Flg. Off. A. H. P. Pearson, Plt. Off. A. B. H. Youell. Class B.—Flg. Off. Lord E. A. Grosvenor, Plt. Off. A. A. C. Nelson Smith.

Major the Hon. M. Baring, O.B.E., is granted an hon. comn. as a Wing Cmdr. (Jan. 20). The following Flg. Offs. are promoted to the rank of Flt. Lt. (Jan. 20):—F. F. Minchin, C.B.E., D.S.O., M.C., C. H. R. Johnston, H. G. Brackley, D.S.O., D.F.C., G. L. Hunting.

Appointments.

Week ending Jan. 26.

General Duties Branch.—Air Commodores J. G. Hearson, C.B., C.B.E., D.S.O., to R.A.F. Depot (Non-effective Pool) on relinquishing the appointment as A.O.C., Special Reserve and Auxiliary Air Force, 19/1. C. L. N. Newall, C.M.G., C.B.E., A.M., A.D.C., to H.Q., Coastal Area, on appointment as A.O.C., Special Reserve and Auxiliary Air Force, 19/1.

Group Captains A. D. Warrington-Morris, C.M.G., O.B.E., to H.Q., Iraq, for Technical Staff duties, 9/1. W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C., to No. 1 School of T.T. (Boys), Halton, for administrative duties, 19/1.

Squadron Leaders W. J. Y. Guilfoyle, C.B.E., M.C., to No. 9 Sqdn., Manston, 19/1 H. V. Champion de Crespigny, M.C., D.F.C., to No. 39 Sqdn., Spittlegate, 26/1. H. Stewart, to School of T.T. (Men), Manston, 16/1. W. H. Hart, M.B.E., to R.A.F. Depot on transfer to Home Estab., 24/12. H. Dawes, M.B.E., to No. 99 Sqdn., Bircham Newton, 2/2. N. F. D. Buckeridge, to R.A.F. Depot on transfer to Home Estab., 4/1.

Flight Lieutenants A. H. Stradling, O.B.E., to H.Q., Iraq, instead of to Rest Camp, Iraq, 27/11. W. Underhill, D.S.C., to No. 45 Sqdn., Iraq, 9/12. A. W. Symington, M.C., to Rest Camp, Iraq, instead of to H.Q., Iraq, 27/11. J. E. MacLennan, to No. 6 Arm. Car Coy., Iraq, 1/1. J. W. Woodhouse, D.S.O., M.C., to I.A.A.D., Henlow, 14/1. A. L. Neale, M.C., to R.A.F. Depot, 15/1. J. C. M. Hay, to H.Q., Cranwell, 20/1. W. E. Theak, to R.A.F. Depot on transfer to Home Estab., 24/12. J. C. M. Hay, to remain at R.A.F. Depot. R. B. Waite, M.B.E., to R.A.F. Depot (Non-effective Pool), 21/1. R. E. Meek, to H.Q., Cranwell, 24/1. D. Gilley, D.F.C., to No. 208 Sqdn., Egypt, 16/1. J. R. Cassidy, to H.Q., Egypt, 16/1.

Flying Officers H. A. L. Pattison, to R.A.F. Trans-Jordania H.Q., Palestine, 16/1. H. J. Adkins, to Stores Depot, Egypt, 16/1. H. K. Goode, D.S.O., D.F.C., A. C. Tremellen, G. L. Gandy, P. Hill, and C. G. C Woledge, to No. 4 F.T.S., Egypt, 16/1. C. R. Smythe, and M. H. Steff, to Boys' Wing, Cranwell, 26/1. A. R. M. Brain, to No. 100 Sqdn., Spittlegate, 26/1. A. E. Beilby, H. S. Davidson, L. H. Brooke, (Hon. Flt. Lt.) W. F. R. Gough, (Hon. Flt. Lt.) R. S. T. Fleming, F. H. Woolliams, A. F. Lingard, A. G. Hill, and H. V. Kerckhove, M.C., to C.F.S., Upavon, 19/1. J. Durwood, and S. H. Cooper, to R.A.F. Depot on transfer to Home Estab., 24/12. S. T. B. Cripps, D.F.C., to Meteorological Flight, Duxford, 9/1. W. Smith, to Electrical and Wireless School, Flowerdown, 21/1. G. H. Smith, to No. 7 Sqdn., Bircham Newton, 14/1. R. Beresford, to No. 39 Sqdn., Spittlegate, 19/1. R. H. W. Empson, to Aircraft Depot, Iraq, 9/12. A. E. Thompson, to Basrah Group H.Q., Iraq, 1/1. E. R. C. Hobson, D.F.C., to No. 70 Sqdn., Iraq, 1/1. T. H. French, D.F.C., to No. 14 Sqdn., Palestine, 3/12. D. R. Dawson, to Aircraft Depot, Iraq, 1/1.

Pilot Officers G. R. M. Clifford, to C.F.S., Upavon, 19/1. H. M. S. Wright, to Meteorological Flight, Duxford, 9/1. The undermentioned are posted to No. 4 F.T.S., Egypt, 16/1:—K. C. Baker, G. S. J. Bowman, W. F. Bryanton, P. B. Chubb, P. K. Copperthwaite, G. W. Cripps, E. J. Ellis, T. P. F. P. Fagan, A. E. Hamilton, F. S. Homersham, D.C.M., M.M., J. A. E. Inkster, L. B. McGoverne, G. P. Mee, B. E. Moody, G. M. E. Shaw, D. C. Sherman, W. A. Shorten, V. J. Sofiano, E. G. D Stewart, M.C., A. C. Watkins, E T. Wiltshire, H. A. Evans-Evans, C. W. Woodbyrne.

Medical Branch.—Wing Commander H. E. Whittingham, M.B., D.P.H., D.T.M. and H., to R.A.F. Pathological Laboratory, Halton, for duty as Director of Pathology, 20/1.

Flight Lieutenant T. J. X. Canton, M.B., to Air Ministry, 16/1.

Flying Officers H. W. Corner, M.B., to R.A.F. Pathological Laboratory, Halton, 20/1. H. C. Patterson, to Research Laboratory and M.O.S. of I., Hampstead, for short course on appointment to a S.S. comn., 14/1. F. L. White, to Research Laboratory and M.O.S. of I., Hampstead, for short course on appointment to a S.S. comn., 16/1. H. W. Corner, M.B., to Research Laboratory and M.O.S. of I., Hampstead, 11/1. J. McC. Kilpatrick, M.B., to Research Laboratory and M.O.S. of I., Hampstead, on appointment to a S.S. comn., for short course, 7/1. R. S. MacLatchy, to R.A.F. Trans-Jordania H.Q., Palestine, 17/12.

Stores Branch.—Squadron Leader P. M. Brambleby, to H.Q., Iraq, 9/1. Flight Lieutenants G. F. Law, to Aircraft Depot, Iraq, 24/12. D. Barron, to No. 1 School of T.T. (Boys), Halton, 27/1. Flying Officers H. A. Williams, to No. 4 Sqdn., S. Farnborough, on transfer to Home Estab., 20/1. A. J. Grant, to R.A.F. Depot on transfer to Home Estab., 24/12.

Accountant Branch.—Flying Officers E. W. Horncastle, to Stores Depot, Iraq, instead of to No. 1 Sqdn., as previously notified, 27/11. E. V. Humphrey, to No. 6 Sqdn., Iraq, instead of to Aircraft Depot, as previously notified, 27/11. F. M. Hall, to No. 30 Sqdn., Iraq, instead of to No. 70 Sqdn., as previously notified, 27/11.

The Martlesham Dinner.

The Annual Martlesham Heath Dinner will be held at the R.A.F. Club on Feb. 20, meeting 7.30 p.m. for 8 p.m. dinner. Tickets 12s., exclusive of wine, obtainable from P.M.C., A. & A.E.E. (Home), Martlesham Heath, up to Feb. 6.

Rugby Football.

R.A.F. v. Cambridge University.—The R.A.F. were beaten at Cambridge on Jan. 21 by 2 goals and 3 tries to 2 goals and 1 try. The following notes are extracted from the *Morning Post* account of the game:—

The 'Varsity got well off the mark by a good rush to the R.A.F. line, where Douty tried but failed to force his way over the line. Before long, however, a series of quick passes by the 'Varsity threes sent the ball to Wakefield, who ran well to score a try. The R.A.F. forwards then began to find their form, and set up a hot attack, which was driven back by Douty with a long kick. From the subsequent attack Douty cut through and scored a splendid try. The R.A.F. continued to play up in great style, but despite the exertions of John Russell, their captain, the backs were palpably weak in attack. Their repeated attacks were rewarded at last by a try scored by Scott, and shortly afterwards, while Douty was off the field with a bad knee, Johnson scored.

The second half was very exciting indeed, when the R.A.F. took the lead through a converted try by Dale; but they did not hold it for long, for a fine rally by the 'Varsity saw Wakefield again score. The R.A.F. replied with equal vigour, but could not stop Field from scoring a try after a long run. Barlow converted. Douty was simply great, and rather too good for Russell, good as he was. The R.A.F. threes must learn not to lob passes.

The R.A.F. team were:—The Rev. J. G. Stephens, back; Flt. Lt. P. G. Scott, Flt. Lt. O. C. Bryson, Flg. Off. P. J. Chambers, and Cpl. J. N. Wale, three-quarter backs; Plt. Off. Lord Bandon and Sq. Ldr. J. C. Russell (captain), half-backs; Flt. Lt. J. F. Chick, Flg. Off. F. W. Sinclair, Flg. Off. Wackett, Cpl. S. Johnson, Plt. Off. F. V. Beamish, Cpl. F. R. Grose, AC. Hampton, and Plt. Off. G. R. Beamish, forwards.

R.A.F. v. Bristol.—The R.A.F. were beaten at Bristol on Jan. 24 by 3 goals and 4 tries to 1 goal and 1 penalty goal. The R.A.F., who were without Sq. Ldr. Russell, Flg. Off. Rose, and Plt. Off. G. R. Beamish, put up a good fight, but were outplayed for the greater part of the game.

The *Daily Telegraph* states that Bristol maintained a pronounced superiority over the Air Force pack, repeatedly getting the ball by clever hooking. Of the Air Force forwards J. S. Chick stood out by himself, in fact he was little short of being the best one on the field. Both in attack and defence he got through an immense amount of fine work. Often he would break away by himself, and, exhibiting a remarkable turn of speed, proved most difficult to stop.

Hockey.

R.A.F. v. Tulse Hill.—The R.A.F. were beaten by Tulse Hill, at Kent House, on Jan. 21, by 5 goals to 1. The feature of the play was the fine goal-keeping of L.-AC. Buchanan.

Halton v. Henlow.—No. 1 School of T.T. met the I.A.A.D. in the final of the R.A.F. Senior Hockey Cup at Uxbridge, on Jan. 17. During the first half Halton, the holders of the cup, had slightly the better of the play, but Henlow's defence was very strong and stopped several promising movements. In the second half Henlow did most of the attacking, but their forwards were ragged and lacked scoring power, with the result that full time came with no score. Extra time of ten minutes each way was played and early in the second period Henlow scored, AC. Renshaw breaking through from half-way. Halton, however, equalised a couple of minutes later from a penalty bully.

The match will be replayed at a later date.

The teams were as follows:—

Halton: AC. Walker, goal; Flt. Lt. Murphy, Cpl. Buckland, backs; S-M. Smith, Flt. Lt. Smith, AC. Webb, half-backs; AC. Romanes, Flt. Lt. Flavelle, Sq. Ldr. Vaisey, AC. Ganley, the Rev. J. F. Cox, forwards.

Henlow: AC. Caynes, goal; Flt. Lt. Angell, L.-AC. Fox, backs; Flg. Off. Traill, Sq. Ldr. Keeble, Flg. Off. Stafford, half-backs; F./Sjt. Barber, AC. Dare, AC. Renshaw, AC. Pryke, and AC. Vincent, forwards.

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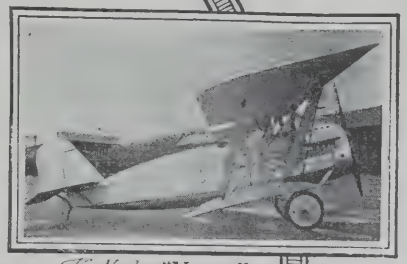


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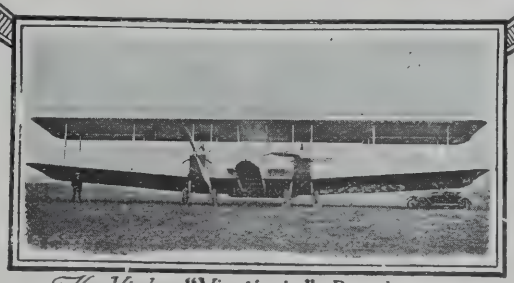
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A South African Memorial.

Dec. 21 was the date fixed for the unveiling by the Governor-General of South Africa of a Memorial erected to those South Africans who were killed or died on service with the Royal Air Force. A collection of nearly £700 was made for this Memorial, £500 of which was given to the Transvaal Memorial Hospital for Children to endow a cot in the name of the R.A.F. The balance goes towards a stained-glass window in the Johannesburg Cathedral and a Mural Tablet on which the respective names are inscribed. The Secretary for the Memorial is anxious to hear of more names eligible for inscription, and any readers who know of such are asked to write to Mr. James D. Anderson, 18, Glencairn Buildings, Johannesburg, South Africa.

Flying in South Africa.

South African aviation appears to be in rather a bad way. The Government does not seem to be interested in it and according to latest advices the only money for Civil Aviation is a grant of £12,000, though no indication is given as to how it is to be spent.

The only flying done in South Africa is that by the South African Air Force. They are still using the antiquated aeroplanes given to them by the British Government, and as these are all of the 1916-17 vintage naturally the S.A.A.F. are not very keen on flying them, especially after certain breakages which have occurred during the past year or two.

How little the machines are trusted may be judged by the fact that when the authorities wanted two machines to give a demonstration recently these were sent from Pretoria by rail, a distance of only 150 miles, rather than fly them that distance.

The personnel of the S.A.A.F. is excellent but one gathers that they are not at all keen on violent flying, probably because the life which they lead normally makes them fond of life and they do not see the fun of taking risks with obsolete aircraft.

A U.S. Air Force.

In December, Representative Curry, of California, introduced in the U.S. Congress a Bill the subject of which is the establishment of an Independent United States Air Force.

This Bill would create a Secretary of Aeronautics to be appointed by the President, an Assistant Secretary, and two Division Marshals, one to be Chief of Military Air Forces and the other Chief of Civil Air Forces.

In each division would be four departments, each headed by a Brigade Marshal, corresponding to a Brigadier-General. The Brigade Marshals would be appointed by the President, subject to Senate confirmation, but though some would have to be commissioned officers in the Army or Navy Air Services, others would be drawn from civil life.

The eight departments Mr. Curry would set up are :—War Plans, Training, Operations, Administration, Engineering Supply, Finance and Civil Activities, the first four to be supervised by the Chief of Military Forces, and the others by the Chief of Civil Forces.

Under the Training Department the Bill provides for the establishment of a Staff College, a War College, and an Air Force Academy to train new officers for the Military branches and also special schools to instruct pilots for the Civil branch.

The rate of promotion would be more rapid in the Military branch with better pay and retirement privileges than is at present the case with flying officers in the Army and Navy. The Bill also specifies that 25 per cent. of the officer personnel would serve for 10 years only, thus ensuring a younger and theoretically more suitable flying force.

The idea of a separate Air Force has many staunch supporters in the States, but it is obvious that strong influences in the Army and Navy are going to do their best to stop the Bill.

Getting Ready In Russia.

The Russian air programme for 1925 provides for the acquisition of 1,030 new aeroplanes, of which number 500 are to be built in Russia, chiefly by the Russian Junkers Co., 330 are to be ordered from the Fokker Co., and 200 from several Italian firms.

During the first six months of 1924 Russia bought about 700 modern aircraft in Holland and Italy.

Rumour has it that there is trouble between the Russian Government and some of its sources of supply owing to Russian attempts to dodge payment.

Airship Affairs.

According to *The Times*, Dr. Eckener, chief of the Zeppelin Company in Germany, and Captain Lehmann, vice-president of the Goodyear Zeppelin Company of America, have arrived in England to confer with Commander Burney, M.P., director of the Airship Guarantee Company.

Dr. Eckener and Herr Lehmann, it will be remembered, recently took the Z.R.3 across the Atlantic from Friedrichshafen to Lakehurst, New Jersey, 5,000 miles, in 80 hours. Commander Burney has been instrumental in reviving British airship activity, and the Airship Guarantee Company is now building one of the two airships of 5,000,000 cubic feet capacity which the State have ordered.

A History of British Aeronautics.

[The History of Aeronautics in Great Britain. (From the earliest times to the latter half of the Nineteenth Century.) By J. E. Hodgson. Published by the Oxford University Press. 436 pages, 150 illustrations. 84s. net. Limited to 1,000 copies.]

Mr. Hodgson's book is, so far as it goes, a complete history of Aeronautics in Great Britain. Beginning with the mythological and legendary period of Daedalus and Icarus outside Britain, and continuing by way of Bladud the Flying King of Britain, it proceeds to the development of Aeronautical Science at the end of the last century. The first section is a general survey of the whole period under review in which the Author includes the experiments and discoveries in other countries which were contemporary with the work in Great Britain. This survey, which is in two parts, is followed by the fifteen long chapters of the history itself and the book concludes with a very complete Chronology, Bibliography and a list of papers in the Aeronautical Society's Reports from 1866-93.

The illustrations are nearly all reproduced from prints and books in the Cuthbert Collection and thirteen of them are coloured.

The Author divides the history of aeronautics as covered by his book into four eras. First the legendary and prehistoric era in which Bladud, the mythical tenth King of Britain, who practised and taught magic, met his death in an attempt to fly in 852 B.C. This period merges into the historic and extends to the end of the fifteenth century and includes the efforts of Roger Bacon, whose writings from 1214-94 were in the direction of an engine with wings, and Oliver of Malmesbury about A.D. 1040.

Leonardo da Vinci, whose writings and designs for winged flying and helicopters in the second half of the fifteenth century were hidden in obscurity for nearly 300 years, and John Damian the adventurous Abbot of Tungland, who tried to fly to France from the top of Stirling Castle, belong to the second era during which the practicability of flight was a matter of speculation and extends to the latter half of the eighteenth century.

The third period tells of the first limited achievement, beginning with the discovery of the balloon by the joint efforts of the brothers Joseph and Etienne Montgolfier, whose first public experiment was in 1783 with a paper-lined linen balloon 110 feet in circumference which ascended to 600 feet when filled with hot air.

The discovery in 1766 by Henry Cavendish of the weight of hydrogen started the brothers Robert on the construction of a hydrogen balloon in which Jac. Charles ascended to 9,000 feet in 1783 and remained in the air for two hours.

The progress of the balloon proceeded with great rapidity from this point and Mr. Hodgson's book describes all the early efforts and successes of Lunardi who, while Secretary to the Neapolitan Embassy in London, built the first balloon in this country and eventually travelled in it a distance of about twenty-four miles.

The experiences of James Sadler and his two sons Windham and John are also dealt with at considerable length. Although none of their balloons were scientifically designed they nevertheless succeeded in ascending to great heights and in 1817 Windham Sadler crossed the Irish Sea in one of them.

The Author describes how the balloon was first put to military uses at the battle of Fleurus, in 1794. The pilot, Coutelle, who had joined the Moselle Army under General Jourdain, remained in the air for several hours and signalled information to the French forces. Coutelle was ordered to Egypt in 1798 and all the balloon matériel was destroyed in the battle of Aboukir Bay. The "Aerostiers" were disbanded in 1799. Nothing further was done in France for over fifty years.

In England Henry Coxwell was engaged in 1862 to undertake experiments at Aldershot and eventually was invited by the Germans to instruct balloon detachments at Cologne on the outbreak of the Franco-Prussian War. The difficulty of transporting the plant for generating the gas prevented balloons being much used on either side during this war. During the siege of Paris however balloons were used for escaping and for postal communications.

The next part of the book deals with the navigable balloon from the primitive use of sails and rudder to the suggestion in 1784 of Bourgeois of the application of a screw as propellor. This suggestion was carried out by Meusnier in the same year and its practice involved the use of an adjustable plane surface fitted beneath the balloon. Meusnier later designed an airship on these lines.

A practical attempt to apply the idea was made by Robert in 1784 but although the airship ascended the power proved utterly insufficient. A number of similar attempts are described very fully in this book including one by Pauly who

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tried to obtain dirigeability by fitting air pockets fore and aft.

A revival of interest in dirigeable balloons took place about 1850 when Henri Giffard constructed a small light-weight steam engine of 3 h.p. Two years later he designed and built an elongated balloon with a 3 h.p. steam engine driving a three-bladed propellor at 110 r.p.m. He made a successful flight on this. Further progress was made in 1898 when Santos Dumont fitted a petrol motor to his first small dirigeable.

Dealing with heavier-than-air machines Mr. Hodgson describes Sir George Caley as the most important contributor to the science of aeronautics during the first half of the nineteenth century. As early as 1809 he discarded the wing-flapping idea and from that year his essays on aerial navigation regard it from the purely mechanical aspect. His writings influenced a number of designers, amongst whom were Henson who designed a monoplane with rigid wings in 1842 and Stringfellow whose power-driven model flew a short distance in 1848.

By 1880 the basic principles of the aeroplane were understood in France, England and Germany but the power was still to be found as it was not until six years later that the Daimler internal-combustion engine was invented.

The development of the parachute is the subject of a chapter of this remarkable book and yet another chapter is devoted to kites and kite-flying.

A description of the origin and formation of the Aeronautical Society in 1866, "to foster and develop the Science of Aeronautics which has stagnated for so many years" is particularly interesting. The Duke of Argyll was the first President and the Society's efforts to rescue the balloon from the showman and put it to military and scientific purposes are fully described.

Mr. Hodgson's book is carefully and fully indexed and annotated and should be in the Mess of every Unit of the Royal Air Force and in the library of such as can afford it. In fact nobody can consider his or her aeronautical education complete who has not read it.

New Technical Literature.

Aeronautical Research Committee R. & M. No. 916.—Slot Control of an Avro with Standard and Balanced Ailerons. By F. B. Bradfield. Price 1s. net.

R. & M. No. 923.—Cold Work and Fatigue. By L. Aitchison. Price 3d. net.

R. & M. No. 925.—An Improved Model of Optical Indicator. By W. S. Stein and H. Moss. Price 1s. 6d. net.

R. & M. No 926.—P.5 Flying Boat N.86, Impact Tests. Staff of the William Froude National Tank and of the Marine and Armament Experimental Establishment, Felixstowe. Price 6d. net.

R. & M. No. 927.—The Characteristics of Thick Aerofoils. By H. Glauert. Price 2d. net.

R. & M. No. 931.—The Friction of Pistons and Piston Rings. By T. E. Stanton. Price 4d. net.

PERSONAL NOTICES.

Death.

BRADING.—On Jan. 26, Constance (*née* Fuller), wife of Roy C. B. Brading, R.A.F. Funeral, Thursday, Jan. 29, at St. Jude's Church, Hill Street, Birmingham, at 2 p.m. Afterwards at Brandwood End Cemetery.

WOODWARD.—On Jan. 19, at Chester, as the result of an accident, L-AC. George Woodward, R.A.F., Sealand.

Forthcoming Marriages.

EVENS—WHITEHEAD.—The engagement is announced between Flt. Lt. H. W. Evens, R.A.F., eldest son of Mr. and Mrs. W. Evens, of Westcliff-on-Sea, and Jean, youngest daughter of Capt. and Mrs. Ralph Whitehead, of Blyth, Northumberland.

DIVERS—ELLWOOD.—The engagement is announced between Flt. Lt. Rowland John Divers, M.B.E., R.A.F., and Miss Ruth Ellwood, only daughter of Mr. and Mrs. O. T. Ellwood, of Sealand Bank, Queen's Ferry, Flint.

Births.

BRADING.—On Jan. 16, in Birmingham, to Constance (*née* Fuller), wife of Roy C. B. Brading, R.A.F.—a daughter.

LARKIN.—On Jan. 21, at St. Kilda, Australia, to Vera, the wife of Capt. H. Larkin, D.F.C.—a son.

MITCHELL.—On Jan. 15, at 129, Wigmore Street, the wife of Group Captain W. G. S. Mitchell, R.A.F.—a daughter.

QUINE.—On Jan. 22, at Grey Home, Queen's Road, Hoylake, Cheshire, to Hilda (Toulouse), wife of Flt. Lt. S. L. Quine, M.C., R.A.F.—a son.

The Long-Range Napier.

The following letter was sent on Dec. 10, 1924, from Tokyo to Mr. H. T. Vane of D. Napier and Son, Ltd., by Major Zanni of the Argentine Army, after his fine flight from Amsterdam :—

Dear Mr. Vane :—I thank you very much for your congratulations and the kind remarks contained in your letter of the 20th October.

I am glad that my experiment with your 450 h.p. Lion was such a good one, and I must say that from the very beginning of my flight I started congratulating myself on having selected a Napier engine to carry me along. I could not have made a better choice, and I fully recognise the good reasons that prompted you to affirm that it is the best in the World.

My first engine, the one that brought me along from Amsterdam to Hanoi, was really a fine specimen of trustworthiness and reliability, and when I had to part with it—simply because my other machine sent to me from Japan had already a Napier engine mounted—it felt like parting with one's best friend.

Beltrame (my mechanic) was absolutely delighted with it, and was very sorry that it could not accompany us on to Japan as he was sure it would have lasted all the way, and more if necessary, because after the accident at Hanoi, with the aid of personnel of the French Aviation Corps stationed there, he dismounted the engine and found that it was in perfect condition still and without any apparent change from the day you delivered it despite having flown for 105 hours through sand-storms, the most appalling rain imaginable, which came down just like a curtain, and most of the time through a heat that was too awful for words. These were unfortunately the conditions in which I had to fly.

The French aviators at Hanoi found it hard to believe that my engine had flown 105 hours. If I had not started too late, owing to the illness of my navigator who eventually had to stay behind, I think the accident at Hanoi would not have happened, as the conditions would have been good instead of finding myself flying over lakes instead of earth (caused by torrential rains), and I have no doubt that the engine would have lasted very well up to Japan.

It may interest you to know that some days ago the Japanese Imperial Aeronautical Association asked me to give a lecture relating my experiences during the flight, the organisation of it, and any interesting features of same as they intend to make a Round-the-World flight also. It was attended by many Naval and Military Staff Officers, Pilots of both arms, directors of civil aviation, etc., etc., and in the course of my dissertation, when referring to the accident at Hanoi, I felt bound to declare publicly the following concerning my engine :—

"On dismounting the first engine, which had worked altogether 105 hours without having been at any moment touched, it showed that it was still in excellent conditions and as if it had just left the manufacturer's works, causing very eulogistic remarks to be made by the experts of the French Aviation Corps stationed there."

At the end of the lecture when I was dealing with the experience derived from the material used in my flight I stated :—

"With reference to the types of machine and engine used by us, these have given proofs, more than enough of their exceptional qualities. As I have already stated, the first engine was dismounted after 105 hours' flight, during which period not one single part of the said engine was touched, and it was found as if it had just started to work for the first time. The second engine, in 40 hours of flight, from Hanoi to Kasumigaura, responded in every way to what was expected of it."

At the beginning of the lecture I had said, when describing the steps taken to choose the engine and machine to be used in the flight that "we decided to employ Napier engines, Lion type standard, of 450 h.p. because after the tests to which these had been submitted in our presence no doubt remained in our minds."

As you will note I confirmed publicly my telegram to you which read : "Very delighted state two Napier engines worked admirably until now without slightest indication trouble or wear and without necessity change or touch parts," and I am glad to state also that my lecture is to be published in the form of a pamphlet and distributed throughout the services.

Of course, we had very little time to dedicate to the engine or to look at it as it was a case of arriving at a place in the afternoon, and off next day early, and then very seldom had we any hangar accommodation to protect the engine and machine.

After the accident I sent the engine on to Japan where it is now, and I shall send it forward as a spare engine to be used in case of necessity.

The second engine, the one fitted on the hydroplane, which brought me along from Hanoi to Kasumigaura, has flown so far for 40 hours and during this time it worked just as magnificently as the first one. I am trusting on this one to take me across the Pacific.

Unfortunately I got to Japan so late in the year that I could not get ships to lay the provisions and fuel along the course as the owners would not venture their steamers beyond a certain latitude in the winter because they were convinced that most of the ports and places that I had to touch were frozen. I endeavoured by all means to get the ships but had, eventually, to give it up and resign myself to interrupt the flight until next spring—I think I shall be starting some time in May if not in April.

With best wishes for a happy and very prosperous New Year, and with kindest regards from myself and Beltrame and Mr. Murphy, I remain, Yours truly, (Signed) Pedro Zanni, Argentine Air Force.

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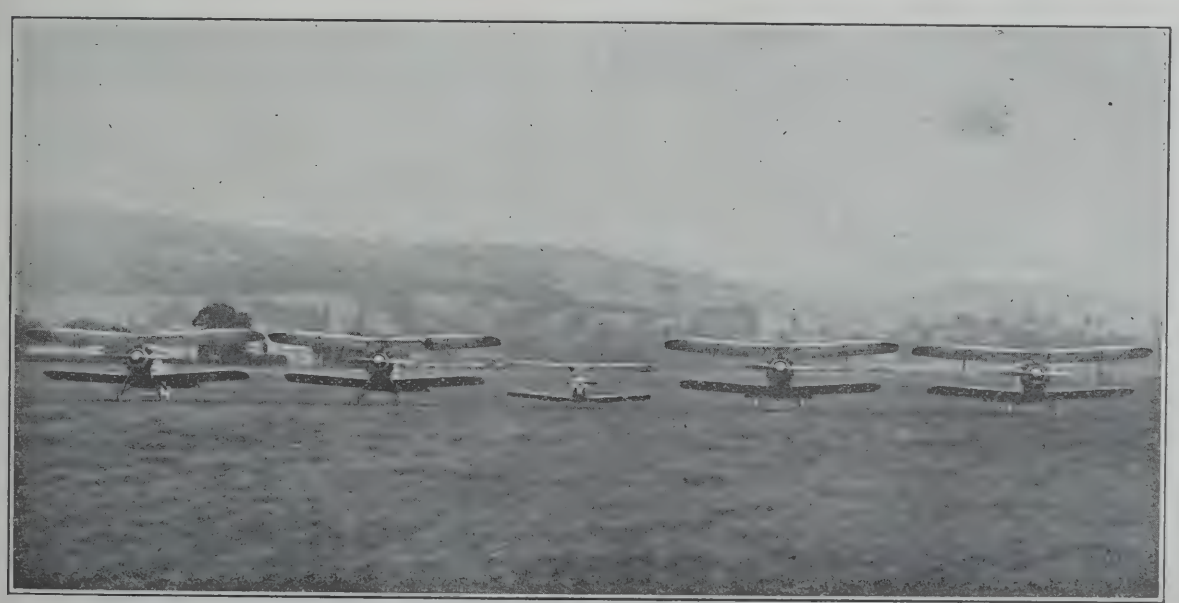
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GLOUCESTERSHIRE "GREBE" MACHINES WITH GANNET LIGHT 'PLANE IN CENTRE.

THE FLETTNER ROTOR AND AIRCRAFT.

The widespread publicity which has been given to the Flettner Rotor-ship in the daily press has created a good deal of interest in aeronautical circles, and, it would appear, to a certain amount of misconception.

The Flettner Rotor has in fact a very close connection with aeronautics, for the cross force on the rotor which is employed to drive the ship owes its existence to causes practically identical with those which account for the lift of an aerofoil. It may be remarked in passing, that the ordinary sail, at any rate when it is used for sailing across or up into the wind, is a form of aerofoil, and that a certain number of experiments which have been made with aerofoil sections as sails indicate that from the aeronautical point of view the usual fabric type of sail is a distinctly inefficient aerofoil.

Readers of this paper will in general be familiar with the theory that the lift of an aerofoil is due to the combination of the flow past the aerofoil and of a circulation round it, which causes a force at right angles to the wind direction or the aerofoil's own path. In the aerofoil the circulation is caused by viscosity, and its amount is determined by the shape of the aerofoil and by the speed of the flow past the aerofoil. As the lift is proportional to the product of speed and circulation, and as for a given aerofoil shape the circulation is nearly proportional to the air speed, in an aerofoil the lift—at a given angle of incidence—is practically proportional to the square of the speed.

The Theory of the Rotor.

In the Flettner Rotor the circulation is caused by viscous forces brought into play by the rotation of the cylinder and not by the shape of the rotor. The cross-wind force which is used for propulsion, like the lift of the aerofoil, is proportional to the product of the wind speed past the rotor and of the circulation. But unlike the aerofoil the rotor has a circulation which is independent of the wind speed. This force is therefore not proportional to the square of the wind speed—for a given speed of rotation the force will be more nearly directly proportional to the wind speed.

On the other hand, for a fixed wind speed the force can be altered by altering the speed of rotation of the cylinder, so that the force actually available for propulsion may within certain limits at least be maintained independently of the wind speed by increasing the rotor speed when the wind drops or by decreasing it as the wind rises.

Its Use on Ships.

Obviously for ship work the characteristics of the Flettner Rotor have very great advantages over the ordinary type of sail. It has occurred to a number of people that many of these advantages would be applicable to an aeroplane if it were to be fitted with rotors instead of wings. But it seems extremely unlikely that the principle can be applied to the aeroplane, for the two cases are widely different. The ship is held up to the wind by its water resistance and it is therefore able to use wind energy to propel it, and provided that there is any component of the total wind force along the desired path the ship can travel along that path. Provided that the wind force abeam is not sufficient to capsize the ship, it scarcely matters how large that force is, for the water resistance to sideways movement is enormous compared with any wind forces. Put into other words, it is an advantage to the ship to be able to increase the total cross-wind force, but it is relatively unimportant how big its air resistance—in the aeronautical sense—may be.

The Case of the Aeroplane.

The aeroplane has to provide from its own resources the power necessary to overcome its air resistance. The air resistance of an aeroplane may be divided into two parts—one known as the induced resistance which is necessarily incurred in producing the lift which supports it. So far as this part of the resistance is concerned the rotor would appear to be on an equality with the ordinary wing. That is to say that for the same span, the same load, and the same speed, the induced resistance to the rotor will be about the same as that of a normal wing. In addition to the induced resistance the normal wing produces an added resistance, known as profile drag, which is mainly accounted for by skin friction, as the wing is actually a very good streamline form and gives rise to very little turbulence or eddy-making. A cylinder is very far indeed from a streamline form—it causes violent eddies in its passage, and consequently a very great resistance.

The nature of the flow round a Flettner Rotor is not the same as that round a cylinder, it is modified by the impressed circulation, but it seems inconceivable that at any air speed that has the least value for aeronautical purposes, the flow can be any other than extremely disturbed, and consequently the cause of very great resistance.

It has been suggested that as the circulation may be increased by increasing the speed of rotation, it is only necessary to make the cylinders small enough to reduce the resistance to any desired extent and then to spin them fast enough to produce the required lift at any air speed one may choose, and that therefore one could increase the cylinder loading indefinitely and that the landing speed would then be determined by the speed of rotation of the cylinders alone.

The Snags.

Unfortunately this is pretty certainly not true. One certainly cannot reduce the span indefinitely, for the induced drag increases as the span is reduced, and drag means power for propulsion. The rotors have to be strong enough to carry the air loads imposed in flight, for a given span they must have a minimum depth to contain the structure to carry this load. Therefore there is a limit to the reduction in size which is possible. In fact the smallest possible diameter for a practical rotor may be expected to be of the same order as the depth of a normal wing to carry the same load. The resistance of such a cylinder may be anything up to 6 to 8 times the profile drag of a wing of similar thickness.

Moreover, to obtain the same effective circulation if one reduces the cylinder diameter, the speed of rotation has to be increased in more than the inverse ratio of the diameter—it has to be increased inversely as the square of the radius, so that if the diameter is halved the speed of rotation has to be quadrupled. The peripheral velocity of the cylinder in fact has to vary inversely as the diameter.

The spinning of the cylinder involves resistance. If one reduces the diameter and correspondingly increases the speed of spin to produce the required effective circulation, the resistance will increase. If this resistance followed the V^2 law the resistance would increase inversely with radius, and the power required to overcome it inversely as the square of the radius.

Possibly the resistance and power required will increase less rapidly than this, but it may be said safely that the power required to spin the rotor will increase much more rapidly than inversely as the radius. Therefore if one attempts to cut down the resistance by reducing the size of rotors one will have to use more power in spinning them, and it seems extremely unlikely that it will thus be possible to obtain any result at all comparable with those which can be obtained by the present type of wing.

Some Estimates.

In the absence of any useful data concerning the actual power absorbed in spinning such rotors and their resistance and the lift actually developed by them it does not seem to be possible to estimate how they would compare with a normal wing. But from general principles the span of the cylinders cannot be reduced greatly below that normally used for wings carrying an equal load because the increased induced drag will become prohibitive. Also it does not seem to be possible to get the cylinders down to reasonable dimensions by a process of spinning them faster without a very great expenditure of power. From very rough and somewhat questionable data it seems that rotors such as have been used on the experimental rotor-ship *Buckaw* are equivalent at an air speed of about 30 m.p.h. to a normal wing with an aspect ratio of about 1.6 developing a maximum lift coefficient of 0.6, so far as induced drag goes, and that their profile drag will be about 4 to $4\frac{1}{2}$ times as great, so that the overall L/D of the rotors is much worse than that of the wing.

If the rotors were reduced to one quarter of their present diameter and their r.p.m. increased to 16 times that at present used, the power absorbed in spinning them would probably be increased to some sixty-fold, and this would more than absorb the power required to overcome the greater resistance of the larger rotors.

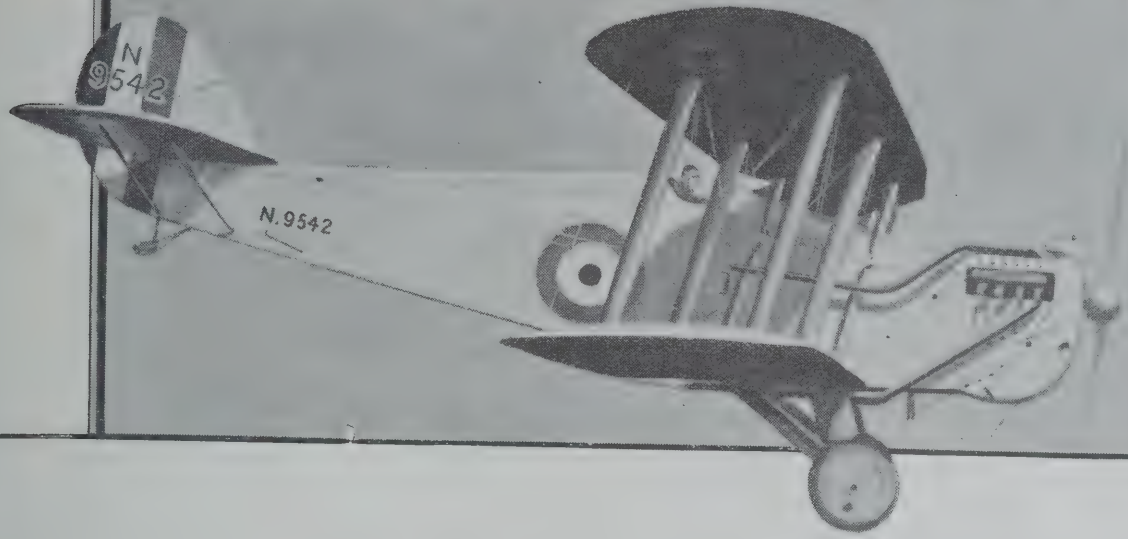
And as it seems extremely probable that any attempt to force up the lift on small-diameter rotors by spinning them at high speeds will lead to a breakdown in the flow precisely similar to that occurring with the ordinary aerofoil at the stall, the rotor aeroplane scarcely seems likely to come to much.

* * *

Since the foregoing notes were written some more definite information as to the actual experimental results obtained with the Flettner rotor have become available. These tend strongly to confirm the opinions already expressed. The rotor has a definite stall—or breakdown—in its lift curve at a constant ratio of peripheral to wind speed. Taken on the basis of the rotor area the equivalent lift coefficient that can be obtained is enormous. The drag of the cylinders is extremely great—the best L/D achieved appears to be approximately 3/1, which is of course quite an impossible value for use on an aeroplane.

There is just one possible application of the rotor to aircraft. If a small rotor is built with a nose of a more or less normal aerofoil section, and is rotated, it will help to force the normal circulation round that wing up to higher values, and probably to extend the angle of incidence at which stalling occurs. It is said that tests with such an arrangement have given promising results.—W. H. S.

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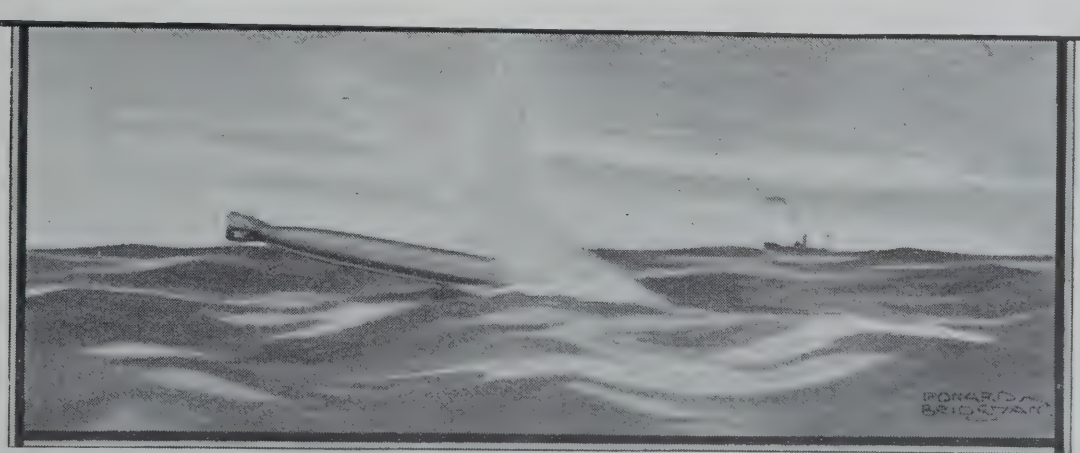
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Royal Aeronautical Society Fellowships.

In view of doubts which appear to exist as to the qualifications required from candidates for Associate Fellowship of the Royal Aeronautical Society, the Council consider it advisable to issue the following statement as to their interpretation of the Regulations.

The Regulations provide for the election to Associate Fellowship of :—(a) Those who pass the Society's own examination, or possess an equivalent University or Technical College qualification, followed by two years' practical experience in the application of the science of aeronautics; (b) Those who present a Thesis; and (c) Those who have very exceptional qualifications or achievements but do not possess the examination qualifications outlined in (a).

In regard to (a) the Council accept the degree or diploma of any recognised University or Technical College at home or abroad, and excuse from the Aerodynamics paper of the Society's own Examination holders of Diplomas in Aeronautics of such Universities or Technical Colleges.

In regard to (b) the Council do not insist upon a thesis necessarily being a record of original work, but require it to be of such a nature as to give an adequate idea of the Candidate's knowledge and experience in aeronautics or an allied subject applied to aeronautics.

Under the heading (c) the Council have accepted pilots of rigid airships, and aeroplane test and experimental pilots whose work has been, or is likely to be, of value to the progress of technical development. They also have accepted long-standing workers in any branch of aeronautics whose experience entitles them to be considered as "Pioneers." In considering applications under this heading it is not possible to lay down any hard and fast rule, but each case must be considered individually on its merits.

Together with the above statement the Council of the Society have issued certain correspondence bearing on this subject. This originated in a letter received by the Secretary wherein it was complained that a number of men of considerable experience in the design of aircraft, who might deserve to become Associate Fellows of the Society, found their way barred by a series of examinations which doubtless presented no serious difficulty to young and relatively inexperienced men fresh from the Universities or Technical College, but was a formidable obstacle to a man who had left school some 15 to 20 years. The writer suggested that the Society was in this way ignoring those who had acquired their knowledge from experience and supporting the theorist who had gained his knowledge from a tutor.

To this the Secretary replied that at least two years of practical experience was required before an examinee became eligible for an Associate Fellowship, and that the Council had power in exceptional cases to accept as Associate Fellows without calling upon them to pass the examinations. He further stated that the Council viewed with considerable sympathy applications from those who had long experience of aeronautics and were within the category of pioneers.

It was also pointed out that the submission of a thesis was an alternative to the passing of examinations.

The correspondent replied that the two years of practical experience did not materially alter the state of affairs, and further, that a thesis, he understood, must be a mathematical exposition of more or less advanced theory based on special research work carried out by the writer. Men engaged not in forming and proving theories, but in applying them to practical use, could not attempt this type of work

After laying the matter formally before the Council the Secretary wrote that the Council confirmed the views he had already expressed and desired him to point out that he had taken too narrow a view of the type of thesis required. It need not deal with special research work and need not be mathematical. All that was needed was a paper which would enable the Council to judge of the applicant's ability. Such a paper might quite properly take the form of a description of the method of applying "other people's experiments on the actual machine."

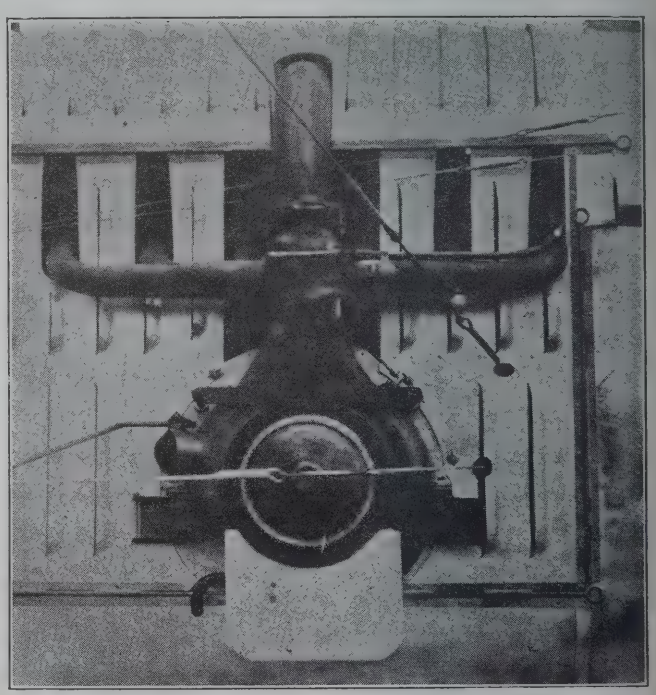
The Council thought it very possible that if such people as those mentioned in the correspondence would send in application forms many of them would be found to be acceptable as Associate Fellows, but that naturally each application which was unaccompanied by examination qualifications or a thesis would have to be considered on its special merits.

[The publication of this discussion and of the Society's conclusions therefrom is welcome. The problem of testing the technical qualifications of an individual in order to assign to him some sort of professional rank or grading presents many difficulties. No form of set examination can be entirely satisfactory, particularly in cases where a young man relatively fresh from college may be competing with one much his senior in age and experience, and not quite so confident of the extent and accuracy of his knowledge. The submission of an original thesis is probably a more convincing proof of ability than any passing of a formal examination can be, but inability to expound one's knowledge and opinions in a reasonably clear convincing method is by no means a proof of practical incapacity. By expressing their readiness to consider the merits of an applicant on his record of work accomplished, the Council of the Society have done all that is possible to open the way to any worthy applicant for this particular grade of membership. But unfortunately it is to be feared that many of those who might most profitably be admitted on this basis will hesitate to apply. The really able and experienced man who is conscious of his limitations as regards the passing of examination or the expression in words of his own ideas will often hesitate to ask for a special concession in his case.—Ed.]

A New American Supercharger.

The photograph here reproduced shows a recent American Supercharger fitted to a Liberty engine. This has been designed for the maintenance of full power at 20,000 ft. There are several novelties embodied in this arrangement, the most noticeable being that the turbine wheel is in the open air. In the older type of supercharger fitted on the nose of the engine the exhaust gas driving the turbine was taken into a nozzle-box, passed through the enclosed turbine wheel and then passed to the atmosphere through passages arranged between the turbine and the blower casings. This made it difficult to give a free exhaust passage.

In the new arrangement the exhaust from the engine passes by the manifolds seen in the picture to a nozzle-box behind the turbine wheel and then through the wheel straight to the open air. The blower is on the far side of the nozzle-box. The turbine wheel is in the slip stream which serves to keep it cool, and also to blow the exhaust clear of the pilot. There



The side-type supercharger fitted to a Liberty engine.

is a saving of weight from the suppression of the turbine casing and exhaust passages.

By careful use of light alloys a good deal of weight has been saved in the blower, with the result that this new supercharger weighs only 100 lbs. as against 150 lbs. for the old nose type, which was not able to maintain full power at much over 10,000 ft.

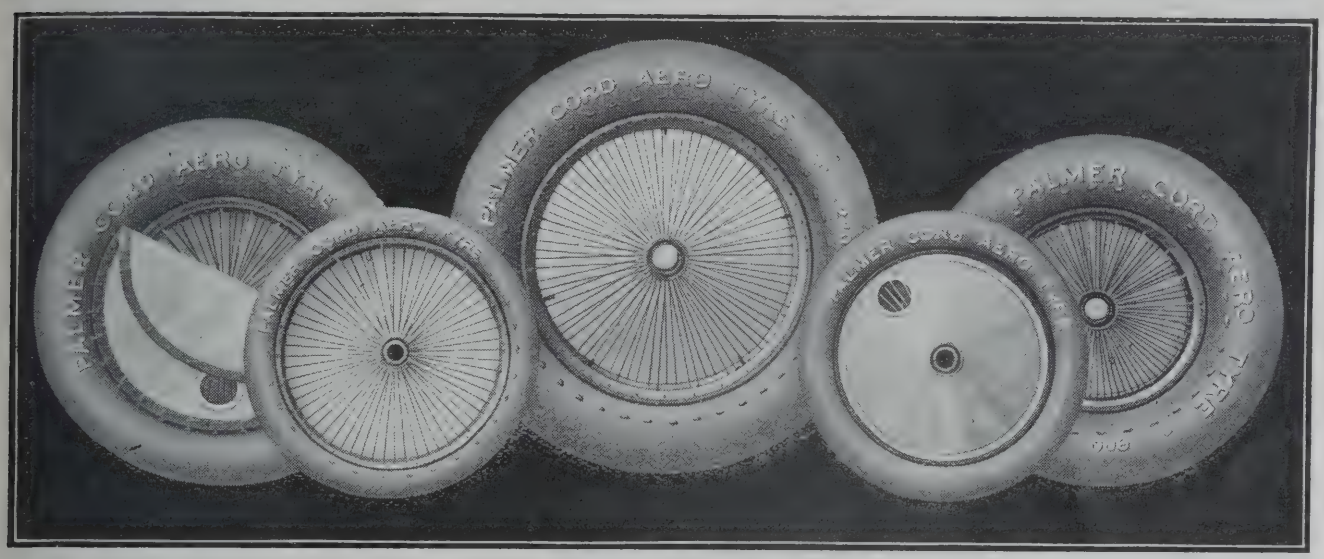
The American authorities have also developed a gear-driven supercharger for the same engine which maintains full power at 7,500 ft. The chief difficulty with the gear-driven type is the enormous inertia of the blower impellor caused by the high speed of rotation. This leads to very severe loads on the gear-drive as a result of variations in engine speed. This difficulty has been overcome by the use of the lightest possible materials for the moving parts, Magnesium alloys having been employed in some places for this purpose.

The Institution of Aeronautical Engineers.

The paper which was to have been read by Prof. Coker, on "Photo-Elastic Methods of Measuring Stress," on Friday, Feb. 6, has been postponed until Feb. 20. The meeting will be held at 6.30 p.m. at the Engineers' Club, Coventry Street, W.1.

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575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
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700×75	78	178.	44.45	132 46
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,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
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SINK (240)

The Australian Light Aeroplane Competition.

After many postponements, the Light Aeroplane Competitions promoted by the New South Wales Section of the Australian Aero Club took place at Richmond, near Sydney, between Nov. 29 and Dec. 6, 1924. Five competing machines arrived at Richmond, all of Australian design and construction. These were :—(1) Broadsmith B.4 biplane, piloted by Capt. E. W. Percival (A.B.C. Scorpion engine). (2) Broadsmith B.2 biplane, entered and piloted by Lt. H. W. Ross (Anzani 1,075 c.c. engine). (3) Wackett Warbler monoplane, entered and flown by Sq. Ldr. L. J. Wackett, R.A.A.F. (Wackett Wizard engine, 1,490 c.c.). (4) Flying Fox biplane, entered and piloted by Mr. R. W. Reid (Blackburne Tom-Tit), and (5) monoplane entered by L. J. H. Jones and flown by R. Nelson. Two D.H.53 monoplanes were also present, but were not in the competition.

Engines gave very great trouble. The Anzani, in Lt. Ross' machine, refused to run more than a few minutes without damage either to itself or its mountings. It was apparently of the geared type and gave endless trouble. Sq. Ldr. Wackett's engine was by no means in tune—it developed about one half of its designed output, vibrated badly and drank both petrol and castrol in excessive quantities. Despite this handicap the Warbler flew for some 5½ hours during the week.

The Blackburne Tom-Tit in Mr. Reid's machine did not give enough power and the machine was forced down, ran into a ditch and put itself out of action.

The A.B.C. engine in Capt. Percival's machine, however, gave no trouble of any kind, and in consequence this machine carried off the chief honours of the meeting, coming first for reliability, climb and landing, and winning £975.

Although with two Anzani engines Capt. Ross was only able to fly for a total of 50 minutes during the week he won the speed prize (9¼ miles in 7 min. 55 sec.) and the general flying and manœuvring award—total £200.

The Warbler took £120 as second in reliability, climb and dismantling trials.

On the whole the machines—apart from their difficulties with engines—appear to have been quite excellent little aeroplanes and do very great credit to their producers.

The New South Wales Aerial Derby.

Owing to heavy rain, the Aerial Derby organised by the New South Wales Branch of the Australian Aerial Club, already postponed from Nov. 22, 1924, was again postponed from Saturday, Jan. 6, to Monday, Jan. 8. Although a crowd of 10,000 had been disappointed on the Saturday and in spite of the fact that Richmond is 45 miles from Sydney, a crowd estimated at 4,000 was present on the Monday.

Seven entries lined up for the start. These were the Broadsmith B.4 light aeroplane (A.B.C. Scorpion engine), pilot, Mr. C. H. Elwin Coles; Mr. Bert Hinkler's famous Avro Baby (35 h.p. Green engine) entered by Mr. W. E. Hart and flown by Mr. W. H. Shires, the late Sir Ross Smith's mechanic; a D.H.53 (Blackburne Tom-Tit engine), entered by the Controller of Civil Aviation and flown by Sq. Ldr. Anderson, second member of the Air Board; an Avro 504 (150 h.p. Curtiss engine) flown by Lieut. A. C. Miller; an Avro 504 (180 h.p. Hispano-Suiza engine) flown by Capt. E. W. Percival; a D.H.50 and a D.H.37, both entered by the Controller of Civil Aviation.

The machines got away in the order mentioned. Sq. Ldr. Anderson landed in a field known as "Jones' Paddock" owing to the fact that Capt. Jones had force-landed therein about half-a-dozen times while flying the same D.H.53 in the light aeroplane competitions during the first week of December. Capt. Percival on the Hispano-Avro was unable to run full out owing to oil-pump trouble. Lieut. Miller, on the Curtiss-Avro, arrived home first, followed by the D.H.50, the Avro Baby, the Broadsmith B.4, and the D.H.37.

The D.H.37, flown by Capt. F. W. Follett, won the Derby with the D.H.50 second, but as both these machines were Government property, Lieut. Miller was awarded the Sydney *Evening News* Cup, the Australian Aero Club Trophy, and various cash prizes given by the Sydney *Evening News*, the New South Wales section of the Australian Aero Club and the proprietors of Castrol, Ltd.

The D.H.37, with pilot and one passenger and in extremely hot weather, proved itself to be in extraordinarily good form, touching 130 m.p.h. on certain parts of the course.

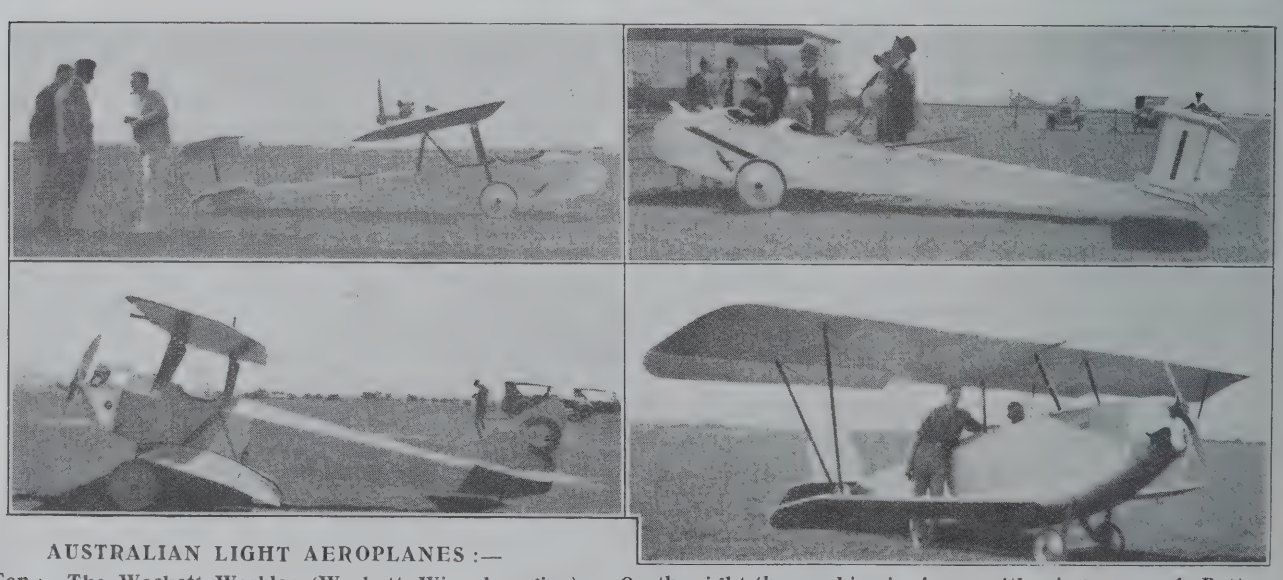
The D.H.50 was not so fast but it was handicapped by having a full cabin of four passengers. The Avro Baby did very well, the 1912 Green engine giving its full 1,350 r.p.m., but perhaps the most credit should be given to the Broadsmith light aeroplane and the A.B.C. Scorpion engine.

The New South Wales section of the Australian Aero Club deserve congratulating on the success of the Derby which, in spite of being held on a working day, attracted roughly 4,000 people to an aerodrome situated 45 miles away from Sydney. This success, coupled with that of the Light Aeroplane Competition organised by the same club, speaks well for the future of the sport of flying in New South Wales.

Shock-Absorbing Hulls.

The paper read before the Institution of Aeronautical Engineers on Friday, Jan. 23, described certain experiments carried out by Lt. N. A. Olechnovitch early in the war as a result of certain experiences with hull failure in the Black Sea. The first experiment consisted of fitting a normal hull with a false fore-bottom hinged fairly close up to the bow and supported on spiral springs just ahead of the step. Tests showed that this arrangement materially reduced the hammering caused by a choppy sea. It was found that the boat took an abnormally long run to get onto the step, and that it could not be helped by rocking with the elevators, and that the boat "hunted" fore and aft in irregular waves. In an attempt to overcome these defects, pneumatic springing (car inner tubes contained in a fabric bag) was used between the false bottom and the hull. The reduction in the hammering was less satisfactory, and the longitudinal hunting, though lessened, still persisted.

A further test was made with a bottom composed of rows of ash planks, fixed to their fore ends only, the free end of each row of such planks overlapping the fixed end of the row ahead. This gave a covering somewhat resembling the scales of a fish, and the end of each row of planks produced a sort of sprung steplet. Only preliminary tests were made, as Lt. Olechnovitch was sent to England before he could pursue the matter further, but these indicated excellent shock-absorbing qualities, no fore and aft hunting, and no increase in run to take off. The author stated that he had placed the idea in the hands of Mr. Mitchell, of the Supermarine Works, and that its further development is under consideration.



AUSTRALIAN LIGHT AEROPLANES :—

Top :—The Wackett Warbler (Wackett Wizard engine). On the right the machine is shown with wing removed. Bottom, left, the Broadsmith B2 (Anzani engine); right, the Reid biplane (Tom-Tit engine).


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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 8; Tuesday, 0; Wednesday, 2; Thursday, 12; Friday, 10; Saturday 9; Sunday, 2.

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K.L.M.:
Amsterdam—Rotterdam—London: Machines 9, passengers 5.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 22, carrying 40 passengers. Foreign machines: 20, carrying 26 passengers.

Comparative Figures:

For week ending Jan. 25:
Machines, 41; Passengers, 60; Crews, 54; Total personnel, 73.

Corresponding week, 1924:
Machines, 40; Passengers, 62; Crews, 62; Total personnel, 124

Corresponding week, 1923:
Machines, 63; Passengers, 131; Crews, 123; Total personnel, 254.

Corresponding week, 1922:
Machines, 13; Passengers, 30; Crews, 20; Total personnel, 50.

Corresponding week, 1921:
Machines, 15; Passengers, 5; Crews, 17; Total personnel, 22.

CROYDON NOTES.

[Owing to bad weather there is little to record about flying at Croydon, apart from some tests of Aircraft Disposals Co. machines by Mr. Perry, and owing to the illness (one hopes only a brief indisposition) of G. D. there has been nobody to record what has been done. Therefore the history of Civil Aviation in all its minuteness can await G. D.'s recovery:—ED.]

The Irish Air Mail.

Mr. Greig and Mr. Higgs, the famous Lawn-tennis players, who are responsible for the organisation of the air line from Belfast to Carlisle, have now registered Northern Air Lines Ltd., and will start the service in April. For eight months of the year it will operate between Belfast and Carlisle, but for four months of the year, in the winter, Stranraer will be the English terminal.

Mr. R. H. MacIntosh, the famous Handley Page pilot, has been appointed chief pilot. A D.H.50 and two D.H.9s will be used.

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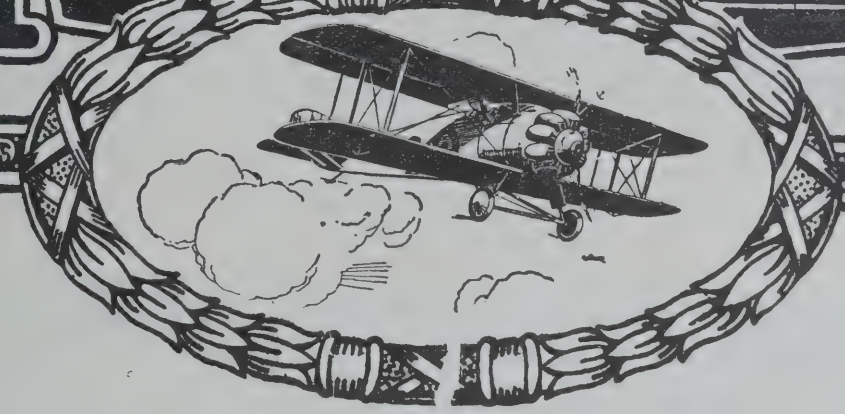
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The *Morning Post* of Jan. 21 states :—

It is expected that the R.33 will make its first flight, after having been reconditioned from Cardington, near Bedford, in about four weeks' time. The ship will be flown to Pulham, Norfolk, whence a series of test flights will be made. The R.33 will be the first all-British airship to take the air since 1921.

Her engines, five 350 h.p. Maoris, are being reconditioned at the Inland Area Aircraft Depot, Henlow.

Castrol Again.

Mr. Alan J. Cobham, who is piloting Sir Sefton Brancker on his aerial survey of the projected air-route to India, has now covered nearly 10,000 miles. He has cabled Messrs. C. C. Wakefield and Co., Ltd., as follows :—

"Arrived Calcutta continuing flight Rangoon before turning homewards Siddeley Puma engine running perfectly on Castrol C keeping low oil temperature and maintaining regular oil pressure found supplies everywhere of this perfect lubricant.—Alan Cobham."

Caricatures of Civil Aviation Celebrities.

A limited number of art reproductions of the original caricatures which are on view at Croydon Aerodrome Hotel, and sundry others, can be obtained privately (with the permission of those concerned) at a nominal cost, at The Trust House, Croydon Aerodrome. Inquiries with regard to these, and further originals, should be sent to Mr. Charles C. Dickson, Selwyn College, Cambridge.

For the Royal Tour.

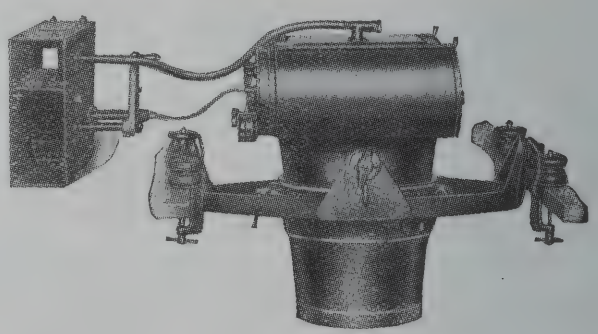
It is interesting to note that Crossley cars are being supplied as the official cars for the use of H.R.H. the Prince of Wales and Staff throughout the forthcoming tour of South Africa. Six open touring cars will be utilised.

It will be remembered that Crossley cars were the only official cars used throughout the Prince's Australian tour in 1919-20, and again during the great Indian tour in 1921-22.

Crossley cars have also been used by H.R.H. for what might be called his minor tours, which took place in Great Britain in 1923, which were as follows :—Yorkshire, Northumberland, Nottinghamshire, and Wales.

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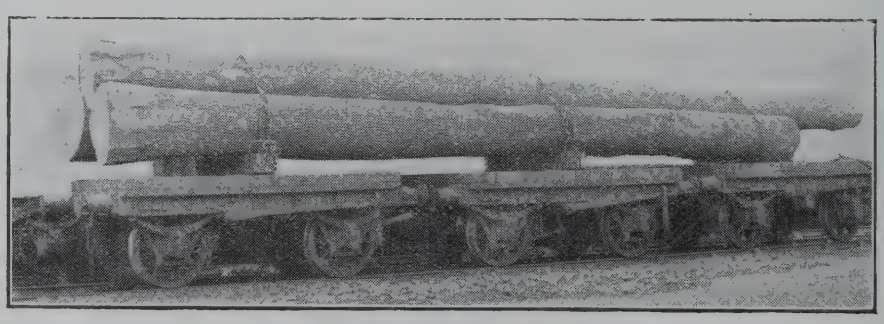


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SYLVIA'S SISTER.



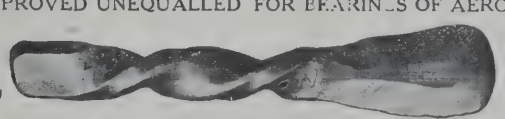
THE NEW SOUTH WALES AERIAL DERBY:—The D.H.37 (Rolls Royce Falcon engine), a sister machine to Mr. Alan Butler's "Sylvia" belonging to the Controller of Civil Aviation of Australia which piloted by Capt. F. W. Follett unofficially won the New South Wales Aerial Derby held at Richmond, Sydney, on Jan 8, 1925. It was competing *hors concours* but secured a moral victory by putting up the fastest speed, an average of nearly 130 m.p h.

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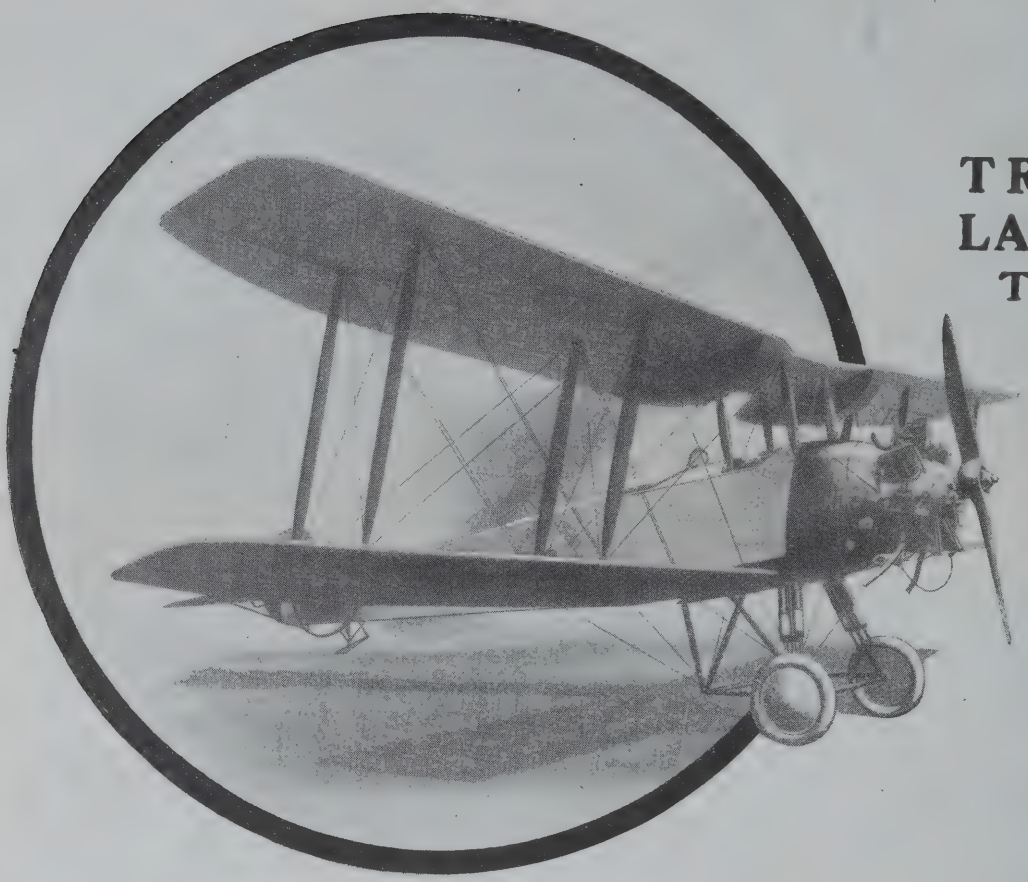
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ON THE OUTLOOK.—V.

AIR POWER ON LAND.

At the moment our Air Power for war on land is just being developed. As has been stated hereinbefore, our war work in Iraq and on the Afghan Frontier is being done by aircraft of 1917 vintage. But we are progressing.

The R.A.F. people in Iraq are getting big Vickers troop-carriers with Rolls-Royce or Napier engines—which, incidentally, they habitually turn into bombers in their own workshops, quite contrary to the intentions of the Air Ministry's technical experts who were responsible for the original specifications of the machines. And the single-seater squadrons, mounted on antiquated Sopwith Snipe with clumsy rotary engines, are each allowed a sample Gloucestershire Grebe or an Armstrong Siskin, with Siddeley Jaguar or Bristol Jupiter engines, to see how they stand up to the climate and the sand.

Thus in due course the land-going squadrons on foreign service will be re-equipped with machines of designs which will by then be not more than six or seven years old.

But the most important progress is being made in the new Home Defence Area. Here we are acquiring entirely new squadrons equipped with entirely new types of machines, such as Fairey Fawns with Napier engines, and Vickers Virginias with Napiers and Avro bombers with Rolls-Royce Condors, Grebes and Siskins and so forth.

It is true, of course, that the new machines and engines alike represent their designers' ideas of years and years ago, and that if all the firms in the Trade were given free hands to produce what they liked in the way of experimental machines, they would in the first twelve months jump five years ahead of the official programme as envisaged by the technical experts at the Air Ministry. But at any rate both aeroplanes and engines are of slightly later design than 1917. In fact most of them have actually been designed since the Armistice in 1918.

Naturally we have nothing so fast as the P.W.8 Curtiss, in the single-seater class, nor as the Bréguêt in the day-bomber class. But at any rate we are past the stage of the Snipe and the D.H.9a. Nevertheless, we ought to be far ahead of where we are, and we should be so if those in high places did not allow themselves to be so "hodden doon"—as the Scots say—by the self-appointed experts who pervade the Air Ministry like a mental and moral fog.

To Whom the Blame?

In a way these ignorant and self-satisfied experts are to blame for our backwardness, and for the slowness of our progress now that enough money is available to outstrip the rest of the World if it were properly spent. But their very ignorance and self-satisfaction is their excuse for being allowed to exist.

If they knew any better and then did wilfully the things which they do in their ignorance they would be traitors to their King and would deserve the utmost penalty just as if they supplied bad ammunition in time of war. But as it is their mistakes are merely those of congenital imbeciles, and the only punishment they deserve is removal from official employment so that they can do no more harm to the Air Force. They would soon find their proper levels, at a pound or two a week, in ordinary commercial life.

But at the finish the Air Staff itself is responsible for the lamentable lack of progress in aircraft design. For the Air Staff controls the fighting men and its duty is to see that the fighting men are provided with adequate weapons. If the Supply Department sends futile aeroplanes to a squadron it is for the Staff to say "Take them away! We'll have none of them."

Therefore the Staff is primarily to blame for the fact that our single-seat fighters are twenty or thirty, and in some cases forty, miles an hour slower than those of certain foreign Powers and that our general-purpose reconnaissance-cum-bomber-cum-artillery machines are just about as much slower than those of other nations. Such things ought not to be. And there is no reason why they should be, if the Staff would put all its feet down and insist on having the best or nothing.

The chiefs of the Supply Department are also to blame for letting themselves be deceived or hoodwinked or mesmerised or befogged, or whatever they may be, by their own self-appointed experts. They also should put their feet down, for they are all officers with war experience and ought to know what the fighting men need.

The Remedy.

Naturally it is hard for the simple soldier or sailor, even of high rank, who has never had any technical training, to compete in an argument with a subordinate who flashes a slide-rule in his eyes like a heliograph or who snows him under with stacks of paper full of graphs and diagrams and calculations which mean nothing to him, and precious little more to the expert himself.

But there is no need for the chiefs to argue. All they have to do is to tell the expert in charge of that job that if he does not produce from the Aircraft Industry by such and such a date an aeroplane or an engine or a what-not with a performance better than that of the best foreign competitor, it will be necessary in the interests of National Economy to reduce the Technical Staff by one—and that he will be the one.

If the Industry were left alone without the interference of the experts at Farnborough we should have within twelve months all the aeroplanes and engines of the quality we need. But so long as the aircraft designer is tied down by Air Ministry specifications and has to fit gadgets to suit the ideas of every little individual expert: so long as he has to fit entirely unnecessary radiators because the officials in that department know no better: so long as he has to fit large lumps of timber on his engine because the airscrew department does not understand the properties of metal or the elements of aerodynamics: so long as he has to load his wings with pounds of indiarubber insulation for signal lamps because the electrical department knows so little about electricity: and so long as he has to use old-fashioned methods of construction because the department which is supposed to calculate strains and stresses cannot assimilate new ideas, so long the equipment of the Royal Air Force will be old-fashioned and inefficient.

The Trade's Opportunity.

The pity is that so few of our aircraft manufacturers have tackled this problem properly by the very simple method of building machines according to their own ideas and flatly refusing to let the Air Ministry experts have anything to do with them, either with the theory of their design or their methods of construction. Of course some firms cannot afford the expense of building experimental machines entirely at their own cost. And other firms simply have not the pluck to slap the faces of the experts in that particular way because they are afraid of the experts coming back at them at the first opportunity.

Obviously if a firm does, greatly daring, venture to flout the experts in this way it has got to stand or fall by the success or failure of its first venture. For example, if a firm started to build a high-speed single-seat fighter and that machine turned out to be worse than the standard single-seaters at present in use (which admittedly would be difficult) naturally the experts would see to it that that firm never had another chance of having any of its designs passed in the future which would mean that it would never get orders to build machines of its own design.

But, on the other hand, if a firm built such a machine and it proved to be just about as good as the best American or French machines of to-day, which would mean anything between 20 and 40 miles faster than the best English machines, then the Air Council simply could not afford to ignore such a machine.

Of course all the stress experts would prove mathematically that it was bound to fall to pieces in the air and then it would be up to the manufacturer's own pilot to take the risk of proving that the machine could not be broken in the air. And of course the machine gun experts would want to stick

their guns outside the machine just where they would knock five or ten miles an hour off the speed of the machine and then it would be up to the designer to put his guns where they would not interfere with the speed and would still be easily operated by the pilot. And every other little cubby-hole expert would do his very best to spoil the machine and the designer would have to show that every one of these little gadgets could be put somewhere inside the machine without doing it any harm.

Naturally it would take a man with brains and initiative to get away with such an attempt to thwart the official experts but one is certain that it can be done and one is strongly of the opinion that it has already been done. Though for the time being one is bound not to divulge any further particulars one has sufficient faith in the information one has received to look forward with intense joy to exposing at the proper time the complete defeat of the parasites of the Air Ministry.

If one is right in this supposition then no doubt other firms will take similar action in the course of the next few months, and if only half-a-dozen firms can show that they can, when unhampered by the experts, produce machines which are very much better than those which it is possible to build under official supervision then we may a year or so hence bring the design of our war machines up to the level of that of the leading foreign powers. To that extent the outlook also is good.

And in any case we always have the consolation that there is nothing in the World to compare with the quality of British aircraft construction. Though our machines may not be mighty performers they are well built but, bar the Air Ministry experts, there is no earthly reason why they should not be both.

The Value of Failures.

The Air Ministry experts are not only a curse to the Trade, they are a menace to the safety of the flying personnel of the R.A.F. They play for the safety of their own jobs all the time instead of working for the safety of the pilots. They have no initiative themselves. And they crush all initiative in the Trade because they are afraid to sanction or accept any innovation in design or construction lest the failure of an experiment should be blamed on them.

As Captain Sayers said in his brilliant "Essay in Pessimism" in The Aeroplane of Jan. 7: "It is possible to build an orthodox and successful aeroplane and to learn nothing from the experience. In fact the effect, if any, is rather to confirm a belief in the sufficiency of the knowledge already possessed. It is difficult to build a failure without at least discovering that one knew less than one had believed, which is, after all, one of the strongest incentives to the acquisition of further knowledge."

Here Captain Sayers has enunciated a profound truth. All aeroplanes produced under Air Ministry supervision fly, with very few exceptions, and most of them fly reasonably well, But not one of them is the World's best of its class. And nothing less than the World's best is good enough for our First Line of Defence. As Captain Sayers has said, we need more failures in our experimental aircraft before we can hope for any radical change in methods of design or construction.

Material Supply.

On this phase of the question the attention of those in high places should be drawn to one particular problem of construction. Nearly all our designers, and certainly most of our experts, are jogging along quite cheerfully on the supposition that aeroplanes will be made of wood so long as aeroplanes fly. Now every aeroplane manufacturer knows that one of the most difficult things in the World is to get decent spruce for aircraft construction. Spruce is very nearly as scarce as brains in aviation.

Moreover one has it on the authority of one of the leading lumber men of Western America, including Canada, that first-class spruce for aeroplane construction does not exist. The U.S. Aircraft Production Board, or whatever it called itself, when it set about its vast and abortive production programme in the last year of the War, felled practically every available spruce tree on the American Continent. Of course there is suitable spruce in out-of-the-way positions, but so far as get-at-able timber is concerned there is no further supply and as the farmer objected when he was recommended to afforest his land, "timber is a mighty slow crop." The next war will probably be over before the new crop of spruce is available.

Some people seem to imagine that the difficulty about aircraft timber in wartime is chiefly concerned with shipping. It is in fact quite easy to assure the safe conduct of our supply ships so long as the British Navy does not interfere with them. The difficulty is that so far as aircraft timber is concerned there are no supplies. But we can get metal, both aluminium and steel. Therefore obviously we should concentrate on the design and production of aeroplanes using as much metal and as little timber as possible and that is exactly what we are not doing.

We have in this country certainly the leading exponents of all-steel aircraft construction. We have also done some extremely good experimental work in duralumin. But we are not making the progress in metal work which we should make. The Paris Aero Show demonstrated that the French are going ahead quite well in this direction though personally one believes that their methods are quite unnecessarily complicated and expensive.

There is undoubtedly plenty of opportunity for originality in metal construction if only the Supply and Research Department of the Air Ministry will encourage firms to experiment (and fail) in this direction. England has always been a country of metal-workers rather than of wood-workers and the almost-all-metal aircraft would seem to be in our regular line of business. In this direction the outlook may be either good or bad according to the policy pursued by the Trade and by the Air Ministry during the next six months.

The Need for Knowledge.

The directions in which experiments are needed are many, and the Air Council must press forward this work if it is to do its duty.

We need better engines than any which exist to-day. The petrol engine should have disappeared by now and we should be using crude oil, thus saving the expense of refining. It is true that experiments with heavy-oil engines are in progress, but the progress seems to be slow and encouragement should be given by the Air Ministry to many firms to try what they can do.

There are rumours of mysterious engines under construction in various places, apparently driven either by Christian Science or hot air, if one is to believe what one hears about their weight and fuel-consumption. But one will be quite content if within two years we can get a heavy-oil engine down to the weight of our best petrol engine of to-day.

We need better aeroplanes. We need machines which get off the ground with a shorter run, carry bigger loads, fly faster with the same power, and land more slowly than do the aircraft of to-day, and do not dive and kill their crews if they lose their flying speed. That is all a matter of wing curvature and tail arrangement, and of cleaning up the external lines of the machines.

We can have such machines in twelve months if the Air Council wil insist on them. Only a little experimenting is needed to get them. In fact some designers are already far on the way towards knowing how.

All these R.A.F. aviators and all these civilian passengers who have been killed during the past year or so through machines stalling and nose-diving have been killed quite unnecessarily. In fact they have been killed simply because of the ignorance and obstinacy of the Air Ministry's experts and because of the weakness of the Air Council and its subordinate chiefs of departments in believing those experts whose little knowledge has proved to be such a dangerous thing.

Science and Faith.

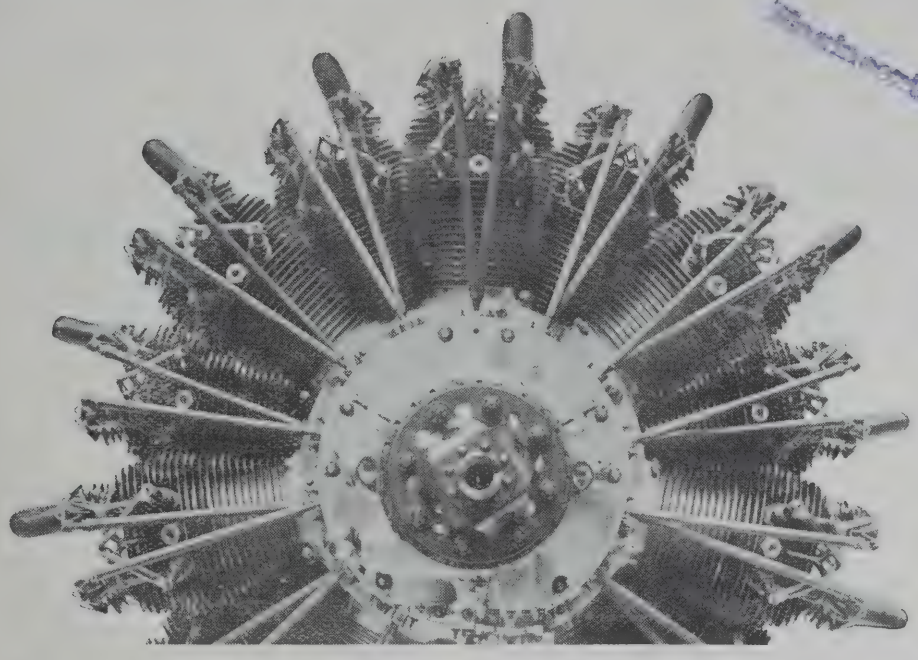
What we need is more knowledge and less science. Etymologically the word science means knowledge. But in practice it has come to mean almost the opposite. It has come to mean the doubting or at any rate the questioning of knowledge. The scientist has become a hindrance to progress when he should be a help.

What we need is more faith in the inspired artist and less reliance on science. An intelligent school-boy in an examination paper once defined faith as "believing what you know isn't true." But there is a higher kind of faith which is *knowing* what you believe isn't true.

One may know for certain in one's inner consciousness that certain facts are so, in spite of all possible proofs which tend to make one believe the opposite. One's objective or conscious mind may believe they are not so, while all the time one's subjective or sub-conscious mind knows for certain that they are so.

That is precisely what is the matter with the scientist. He insists on arguing inductively from what he believes to be facts to the obvious conclusion, which is probably wrong because his premisses, his accepted facts, are probably wrong. The proof is that there is hardly a scientist in any line of business against whom one cannot put up a rival scientist of equally high reputation who is able to upset all his conclusions by assuming different premisses.

One of our few inspired designers—who is, naturally, out of the aircraft business in spite of the fact that a machine which he built some six or seven years ago has recently beaten all our most modern aeroplanes of the same type after being fitted with a modern engine—once remarked that so long as the construction of a new type of aeroplane was at least three weeks in front of the drawing office it had a chance of being really good, but that if once the drawing office got in front and the machine had to be built to the designs of the scientists in that department it was doomed to failure.



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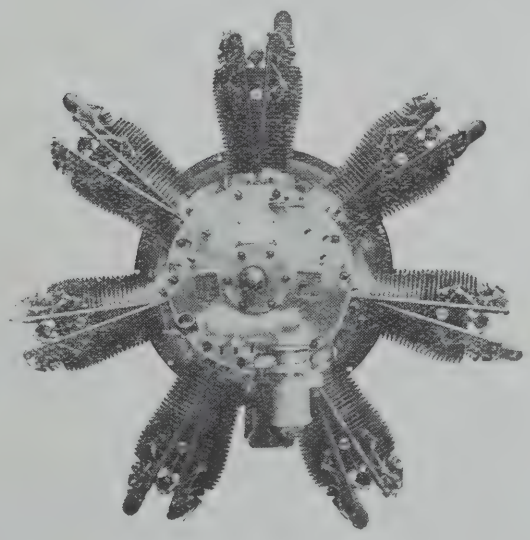
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385-425 h.p.
14-cyl. Air-cooled.

This engine represents the highest point yet reached in the development of the air-cooled aero engine. The design has been the subject of searching tests both on the brake and in flight.

The following is the guaranteed minimum performance:—

At normal speed,
1,700 r.p.m. 400 b.h.p.
Petrol consumption,
·55 pts./b h.p. ·312 Litres per b.h.p. hour.
Oil consumption, ·03 pts./ b.h p. ·017 Litres per b.h.p. hour.
Weight complete,
760 lbs . 346 kgs.



The
LYNX
170 h.p.
7-cyl. Air-cooled.

The "Lynx" is an ideal engine for Training Aircraft. It is most accessible—being superior in this respect to any other aircraft engine. Fuel consumption is very low and construction very simple.

The following is the guaranteed minimum performance :—

At normal speed,
1,650 r.p m., 175 b h.p.
Petrol consumption,
·55 pts./b.h p ·312 Litres per b.h p. hour.
Oil consumption, ·03 pts./ b.h.p ·017 Litres per b.h.p. hour.
Weight complete,
460 lbs., 2 9 kgs.

That actually sums up the whole situation. We have allowed what we fondly imagine to be the science of aerodynamics to get in front and hinder the progress of inspired design.

Somebody once said that what is the matter with modern beer is too much science and not enough hops. That is just the trouble with modern aeroplanes. There is so much science about them that they take too long about hopping off the ground.

The proper place of the scientist in nature is to explain why observed facts are so. Quite probably his explanations will be wrong, but after a while he may help his employer to arrive empirically, which is the scientific word for a process of trial and error or rule of thumb, at something like a reliable formula which will save time in future productive work. He may even show where defects exist and where improvements are possible in existing productive processes. But he should never be allowed to originate or to control the production of anything. The scientist should in fact be employed as the detective of truth, whereas the inspired artist or designer is distinctly a burglar.

Therefore, if we are to progress in aircraft design and construction we must look for more inspired designers who will break away from that half-baked science which its exponents dignify by the name of aerodynamics. The truth is that nobody really knows anything worth knowing about what air does in making an aeroplane fly. And we are wasting a lot of time in listening to those who pretend they do.

Just as the village idiot with a bent pin on a piece of string catches the giant trout which the scientific dry-fly fisherman has lured in vain all day, so the inspired designer can give us the aeroplanes which our scientists do their best to prevent us from getting. The chiefs of the Air Force and of the Aircraft Industry must do more to discover and encourage designers with ideas and must place less reliance on those who only have theories than they do at present.

Apart from that the general outlook for British Aviation is good. We have the finest Air Force in the World. It is quite capable of taking on any other air force at three-to-one odds, except perhaps our relatives in America, and they unfortunately have not yet got an air force.

One has purposely refrained from saying anything about Civil Aviation. One proposes to deal with that subject at some length when the High Authorities have done with wasting time and money on Inquests and Public Inquiries which appear to avoid with care any approach to the fundamental causes of fatal accidents. One need only mention casually that whether an engine fails by accident or on purpose, whether it fails because of breakage or because of bad maintenance has nothing to do with the case. Serious accidents, let alone fatal accidents, ought not to happen at all under such conditions as those in which they do occur. And until such accidents are made impossible, as they can be, Civil Aviation is only a sham and a mockery. For that reason the outlook for Civil Aviation is the least bright of any branch of Aviation, and will be so until it is handled more intelligently.—C. G. G.

The Schneider International Seaplane Race, 1925.

The Schneider International Seaplane Race will be held this year in America. The date of the contest will be announced on or before Mar. 1, 1925. British entries together with the entry fee £10 and the deposit of £100 must be received by the Royal Aero Club not later than Monday, Mar. 23, 1925.

The Gordon-Bennett Balloon Race, 1925.

British entries for the Gordon-Bennett Balloon Race, 1925, together with the entry fee, £10, must be received by the Royal Aero Club not later than Monday, Mar. 23, 1925. The Race will be held at Brussels on June 7, 1925.

More French Records.

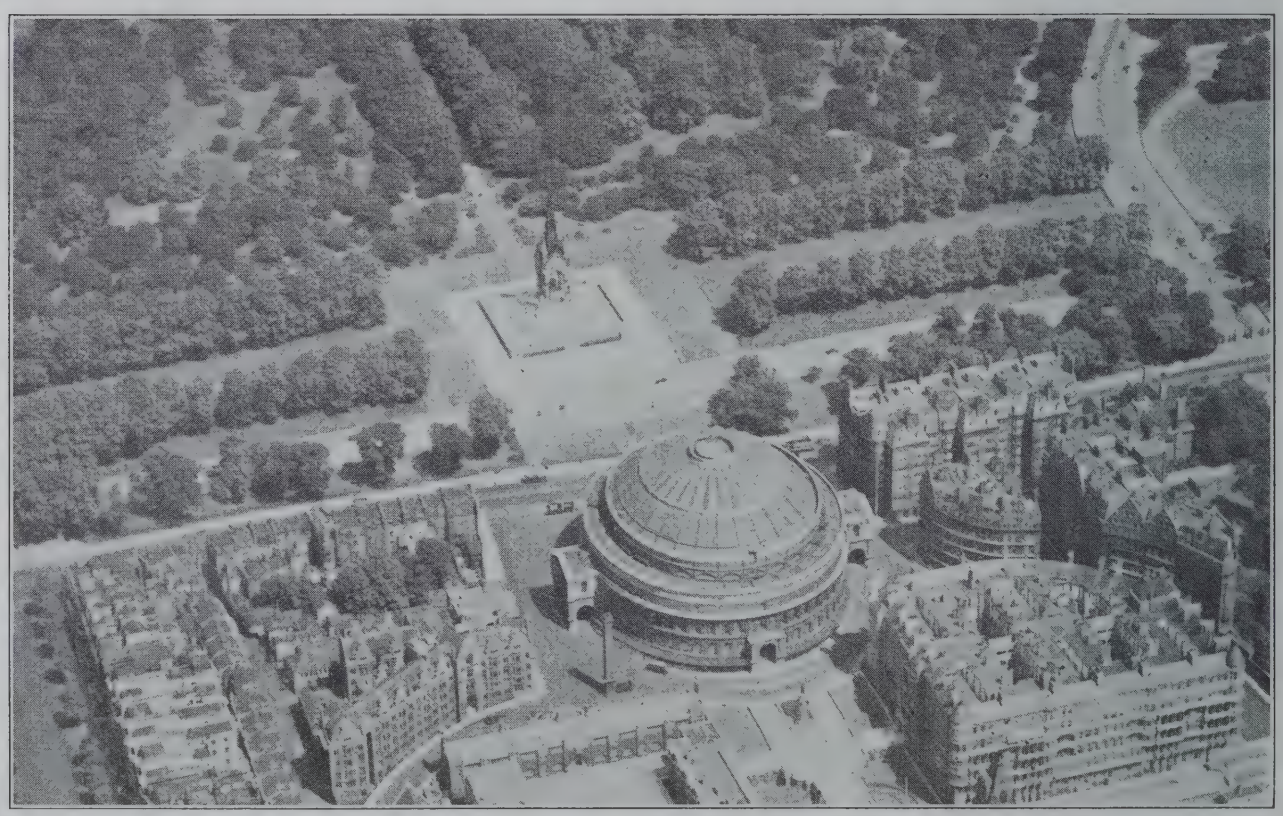
On Jan. 25, M. Descamps, flying a de Monge 101 C.2 (Koolhoven F.K.31), fitted with a Gnôme-Rhône-Jupiter engine, beat all speed records over distances up to 500 kms. carrying 500 kgs. useful load. His speeds were 100 km. 220.7 km.p.h. (137 m.p.h.), 200 km. 216.828 km.p.h. (134.65 m.p.h.) and 500 km. 213.053 km.p.h. (132.3 m.p.h.).

The 100 km. and 200 km. records were previously held by M. Descamps, when, on Jan. 10 he accomplished speeds of 206.42 and 205.85 km.p.h. (127.98 and 127.61 m.p.h.) on the same machine with the same engine.

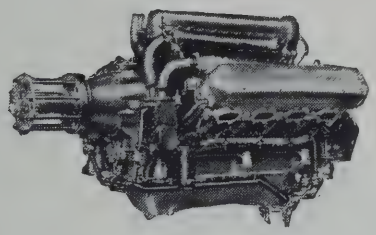
An International Aviation Award.

It is announced that the *Fédération Aéronautique Internationale* (F.A.I.) have decided to award each year a gold medal for the most meritorious aeronautical accomplishment of the whole world. This will be the highest award which can be won by an aviator.

Also the F.A.I. consider that the aviation records officially recognised are too numerous and have decided to abolish some of them. This matter will be decided at the Prague Congress to be held this year.



LONDON FROM THE AIR.—The Albert Hall and the Albert Memorial photographed by the Surrey Flying Services. The trees are part of Kensington Gardens.



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For Speed, Reliability & Efficiency

THE 450 h.p. Napier aero engine has undergone successfully 634 hours testing under the supervision of the Aeronautical Inspection Department of the British Air Ministry.

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BRITISH *BUILT*

THE ROYAL AIR FORCE.

The London Gazette.

Jan. 27.

Group Capt. L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., is appointed Deputy Director of Training, Air Ministry (Jan. 1) (vice Group Capt. P. L. W. Herbert, C.M.G., C.B.E., relinquishes the appointment Dec. 31, 1924).

General Duties Branch.—The following are granted perm. comns. as Plt. Offs., with effect from Jan. 17, and with seniority of Jan. 17, 1924:—C. R. Hancock, J. H. Powle, C. H. Tighe, A. H. Wheeler. The following are granted S.S. comns. as Plt. Offs. on probation, with effect from and with seniority of, Jan. 17:—R. D. Adams, E. Addis, C. A. Bell, R. L. Burnett, J. G. Chamberlain, E. L. Drew, T. D. Egan, S. A. V. Evans, W. E. Fleming, D. S. Green, A. J. Holmes, N. K. Howard, C. M. Inglis, F. M. Kellaway, H. W. Miller, W. L. Mummery, J. C. Noel, L. F. T. Price, J. H. C. Purvis, A. F. Satchwell, D. C. Shaw (Midshipman, R.N.R.), E. Stanier, C. P. Vines, D. R. Way. Lt. A. R. Hamilton (Lt., H.L.I.) is granted a temporary commission as a Flg. Off. on seconding for four years' duty with the R.A.F. (Jan. 17). Plt. Off. D. E. Goodwin is promoted to the rank of Flg. Off. (Jan. 14). The following Plt. Offs. on probation are confirmed in rank:—G. R. A. Pallin (July 31, 1924); R. H. Holmes, I. W. C. Mackenzie, W. F. Parkinson (Dec. 30, 1924).

Flg. Off. H. L. Beatty is placed on half-pay, scale B. (Feb. 1); Flt. Lt. F. Leathley, M.C., is placed on the retired list (Jan. 27); Flg. Off. M. W. Nolan is placed on the retired list on account of ill-health (Jan. 28); Flt. Lt. E. J. Cooper, D.S.C., relinquishes his S.S. comn. on account of ill-health (Dec. 10, 1924) (substituted for notification in *Gazette* of Dec. 9, 1924); Flg. Off. E. C. K. Kingston relinquishes his S.S. comn. on account of ill-health, and is permitted to retain his rank (Jan. 28).

Flg. Off. K. Loughlin is removed from the R.A.F. on conviction by Civil Power (Jan. 28).

Stores Branch.—The following are transferred to the Stores Branch, on probation (Jan. 19):—Flt. Lt.—A. Latimer. Flg. Offs.—E. N. D. Worsley, R. M. Thomas, E. A. Slater, F. W. van Blommestein, J. R. Brown.

Medical Branch.—The following are granted S.S. comns. as Flg. Offs. with effect from, and with seniority of, the dates indicated:—H. C. Patterson (Jan. 14); F. L. White (Jan. 16). Flg. Off. G. R. Nodwell, M.B., is promoted to rank of Flt. Lt. (Jan. 29).

Princess Mary Royal Air Force Nursing Service.—Miss I. M. Tench resigns her appointment as Staff Nurse (Dec. 29, 1924).

Reserve of Air Force Officers.—The following are granted comns. on probation in the General Duties Branch, in the ranks stated (Jan. 27):—Class A.—Flg. Offs.: W. E. Gandell, M.M., R. B. Tapp. Class B.—Flg. Offs.: W. E. G. Cutler, L. E. Owen, R. B. B. Sievier, M.C. Plt. Off.: W. G. Robinson. Class BB.—Plt. Offs.: E. F. S. Hughes, C. R. A. Page, E. M. Stewart. Plt. Off. T. L. I. Bell is promoted to rank of Flg. Off. (Jan. 27); Plt. Off. J. P. Crawford relinquishes his comn. on account of ill-health, and is permitted to retain his rank (Jan. 28). The comn. of Plt. Off. on probation R. Michaelis is terminated on cessation of duty (Dec. 19, 1924).

Appointments.

Week ending Feb. 3.

General Duties Branch.—Group Captain A. L. Godman, C.M.G., D.S.O., to Air Ministry on appointment as Deputy Director of Manning, 26/1.

Wing Commander W. H. Primrose, D.F.C., to R.A.F. Depot whilst on temporary duty in the United Kingdom, 8/1.

Squadron Leaders J. L. Vachell, M.C., to Air Ministry, 2/1. F. J. Linnell, O.B.E., to R.A.F. Depot (Non-effective Pool), 22/1.

Flight Lieutenants V. R. Scriven, A.F.C., to H.Q., Iraq, 1/1. W. L. Fenwick, to No. 5 Arm. Car Coy., Iraq, 1/1. S. L. G. Pope, to H.Q. Egypt, 27/12. C. E. H. C. Macpherson, to Air Ministry, 24/1. A. L. Paxton, D.F.C., to Air Ministry, 1/3. W. E. Theak, to No. 12 Sqdn., Andover, 13/2. E. S. Ades, to School of Naval Co-operation, Lee-on-Solent, 2/2. C. J. W. Hatcher, A.F.C., to Arm. and Gunnery School, Eastchurch, 16/2. J. R. Bell, D.F.C., to Station H.Q., Northolt, 3/2.

Flying Officers B. H. Godfrey, (Hon. Flt. Lt.) I. E. Brodie, and C. W. McK. Thompson, to Arm. and Gunnery School, Eastchurch, 16/2. H. W. Westaway, to No. 1 School of T.T. (Boys), Halton, 11/2. N. V. Moreton, to School of Army Co-operation, No. 16 Sqdn., Old Sarum, 15/2. L. G. Nixon, to No. 9 Sqdn., Manston, 4/2. C. J. Collingwood, to School of Army Co-operation, No. 16 Sqdn., Old Sarum, 12/2. J. B. H. Rogers, to Station H.Q., Bircham Newton, 1/2. F. E. Bond, to Arm. and Gunnery School, Eastchurch, 19/1. C. D. Pyne, to Aircraft Depot, Egypt, 1/1. H. J. T. Russell, and R. H. S. Mealing to No. 216 Sqdn., Egypt, 27/12. A. Page, to Stores Depot, Egypt, 16/12. H. R. McL. Reid, D.F.C., and T. B. Bruce, M.C., to No. 208 Sqdn. Egypt, 27/12. (Hon. Flt. Lt.) R. H. Stewart Peter, to No. 6 Sqdn. Iraq, 21/1. (Hon. Flt. Lt.) L. S. Ingle, M.C., to No. 31 Sqdn., India, 1/1. F. M. Rooth, to No. 31 Sqdn., India, 29/12. C. Lloyd, to No. 1 Sqdn., Palestine, 5/1. G. H. Bennett, to No. 31 Sqdn., India, 21/1. A. W. Henderson, to No. 4 F.T.S., Egypt, on appointment to Temp. Comn. on being seconded from the Army, 27/1. A. R. Hamilton, to No. 2 F.T.S., Digby, on appointment to a Temp. Comn. on being seconded from the Army, 17/1.

Pilot Officers C. R. Hancock, J. H. Powle, C. H. Tighe, and A. H. Wheeler, to No. 2 F.T.S., Digby, on appointment to Perm. Comns. 17/1. The undermentioned Pilot Officers are posted to No. 2 F.T.S. Digby, on appointment to S.S. Comns. (on probation), 17/1:—R. D. Adams, E. Addis, C. A. Bell, R. L. Burnett, J. G. Chamberlain, E. L. Drew, T. D. Egan, S. A. V. Evans, W. E. Fleming, D. S. Green, A. J. Holmes, N. K. Howard, C. M. Inglis, F. M. Kellaway, H. W. Miller, W. L. Mummery, J. C. Noel, L. F. T. Price, J. H. C. Purvis, A. F. Satchwell, D. C. Shaw, E. Stainer, C. P. Vines, L. A. Walsh and D. R. Way. G. R. A. Pallin, to No. 14 Sqdn., Palestine, 5/1. A. O. Pollard, V.C., M.C., D.C.M., to No. 5 F.T.S., Sealand, 29/1. H. G. Slater, and F. T. Stacey, to No. 47 Sqdn., Egypt, 1/1.

Medical Branch.—Squadron Leader R. H. Knowles, M.D., D.P.H., to H.Q., Egypt, 16/1. P. T. Rutherford, O.B.E., to H.Q., Egypt, 1/1. Flight Lieutenants (Medical) E. F. N. Currey, to R.A.F. Base, Malta, 26/1. W. E. Barnes, to H.Q., India, 28/12. Flight Lieutenant (Dental) H. J. Higgens, to H.Q., Egypt, 28/12. Flying Officers J. McC. Kilpatrick, M.B., to R.A.F. Base, Gosport, 28/1. F. W. G. Smith, M.B., B.A., R. W. White, A. Dickson, M.B., and S. S. Proctor, M.B., to R.A.F. British Hospital, Hinaidi, Iraq, 27/12. R. L. C. Fisher, M.B., to Aircraft Depot, Iraq, 27/12.

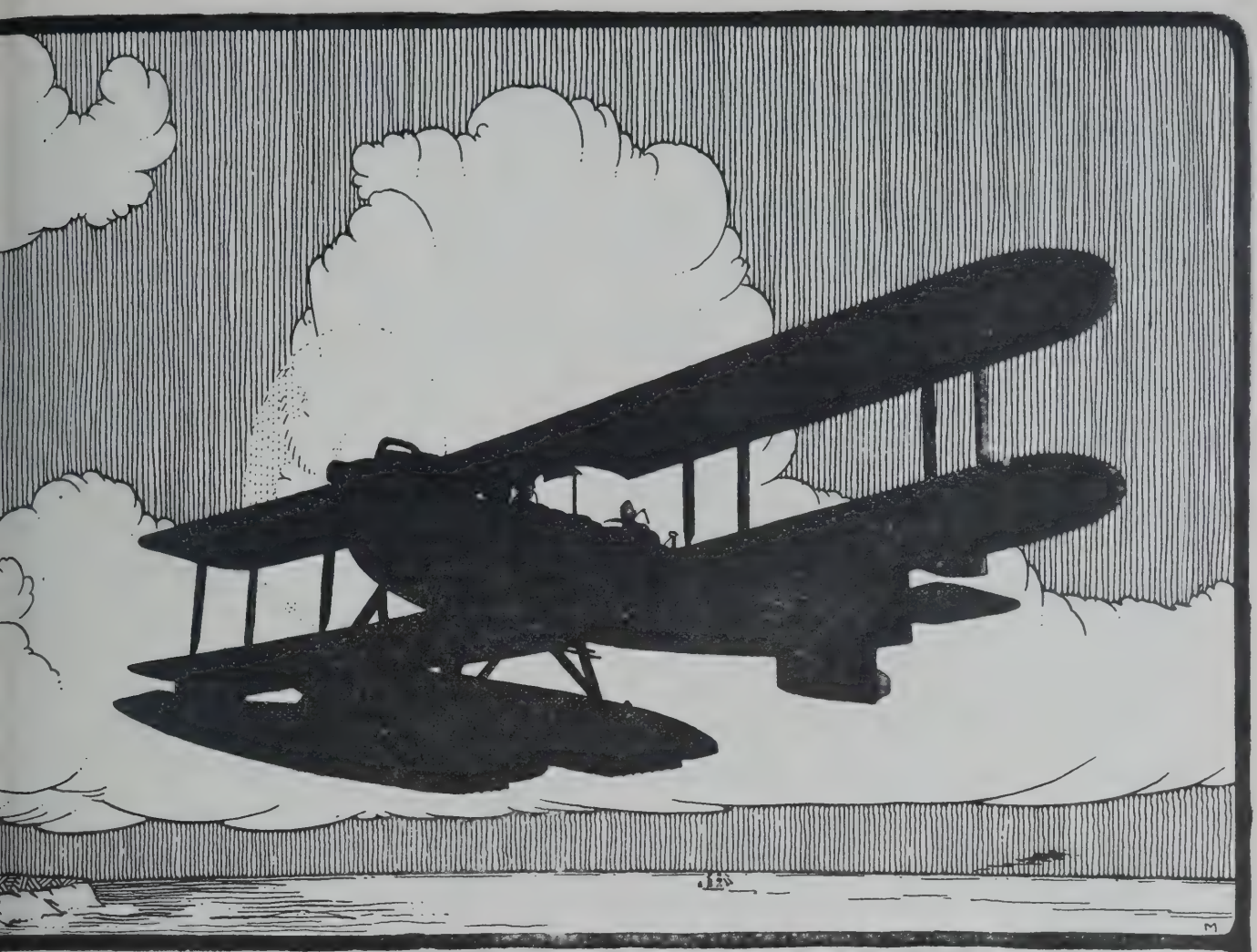
Chaplains' Branch.—The Revd. T. Browne, D.D., Ph.D., to Aircraft Depot, Egypt, 27/12.

Stores Branch.—Flight Lieutenants A. E. Sutton-Jones, to No. 1 Stores Depot, Ruislip, 2/2. E. L. Ridley, to No. 4 F.T.S., Egypt, 27/12. Flying Officers W. St. J. Littlewood, to Aircraft Depot, Egypt, 27/12. H. J. Thomas, to No. 4 Stores Depot, Ruislip, 16/2.

Accountant Branch.—Flying Officers H. Hedderwick, to H.Q. Accountant Office, Iraq, 19/12. J. C. Brice, to School of Balloon Training, Larkhill, 5/2. L. de L. Leder, to No. 3 Stores Depot, Milton, 5/2. F. C. Chalmers, to No. 9 Sqdn., Manston, 5/2. B. E. Hum Wright, to No. 3 Sqdn., Upavon, 5/2. H. E. Cardwell, A.F.C., to No. 1 Stores Depot, Kidbrooke, 5/2. Pilot Officers A. E. West to I.A.A.D., Henlow, 26/1. J. R. Thomas, to M.T. Repair Depot, Shrewsbury, 26/1. S. C. George, to No. 2 F.T.S., Digby, 26/1. S. W. Hill



ON THE NORTH-WEST FRONTIER.—The above photograph of a D.H.9a flying over the Afghan hills is reproduced from the Christmas Card of H.Q., R.A.F., India (Delhi). The country below gives a good idea of the war conditions under which the Air Force always works.



A silhouette of the FAIREY III D SEAPLANE.

The FAIREY 3D may justly claim to be the most successful seaplane in the world.

Ever since 1917, when the forerunner of this type was first produced as the FAIREY III, it has remained predominant as the General Service Seaplane of the British Royal Air Force. Machines of a similar type have also been supplied to various British Dominion and Foreign Governments, and to private firms for commercial purposes.

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Works also at:
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Telegrams: "Airily," Hamble. Telephone: 17 Hamble.

to H.Q., Cranwell, 26/1. R. W. Collinson, to School of T.T. (Men), Manston, 26/1. L. M. Spicer, to No. 1 School of T.T. (Boys), Halton, 26/1. R. C. Dickinson, to R.A.F. Depot, 26/1.

Air Operations in Iraq.

The following account of hostile raids into Iraq and the subsequent R.A.F. action is taken from the *Times of Mesopotamia* of Jan. 10 :—

Baghdad, Jan. 7.

A series of raids has been made during the past week by Akhwan followers of Ibn Saud on Iraq tribes in the neighbourhood of 70 miles south-west of Samawa. The total of Iraq casualities is not yet known. In the first raid 46 were killed. In later raids probably many more. The first tribe raided was the Bani Huchaim.

It so happened at the time that a British Special Service Officer was visiting the tribe on purpose to warn them that they had moved dangerously near the Wahabi frontier. When the raid occurred he made a dash for the nearest railway station, 60 miles distant, enduring great hardships from rain and the cold of the night on the desert. From the station he telegraphed the information to Air Headquarters, Baghdad.

Wind and snow prevented an immediate aerial attack, but two days later a number of aeroplanes caught the raiders on the Iraq side of the frontier and heavily attacked them. The Akhwan fled, abandoning their loot. Subsequently a second air attack was made. Fifty-eight camels were killed. Iraqi tribesmen recovered their stolen property.

When the second raid occurred 150 Iraqi tents were destroyed with much slaughter. It is reported that every male over 10 years was killed, though women were unharmed. Immediately the information of this outrage was received a strong force of aeroplanes left Baghdad for Samawa to search for the raiders and locate them

On Jan. 7 they began heavy bombing and machine-gunning. The Akhwan lost 50 killed and many camels. Further attempts were made to overtake the fugitives. The Iraq tribes were given assurances of aerial protection if they wished to follow in the track of the raiders to collect the abandoned loot. The High Commissioner has sent a strong message to Ibn Saud requesting him to give immediate orders for the prevention of raids and to return the loot, adding that raiders will suffer severe punishment.

The *Times of Mesopotamia* understands that the Air Officer Commanding has placed before the Iraq Ministry of Defence a proposal for the construction of a frontier post south of Nasiriyah garrisoned by Iraq infantry. As soon as a permanent blockhouse has been built it will contain a wireless installation for the purpose of transmitting to Baghdad speedy news of raids.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident at Hal Far Aerodrome, Malta, to a Fairey Flycatcher of No. 403 (Fleet Fighter) Flight Mediterranean on Jan. 29, 1925, Flg. Off. Richard Lewis, the pilot of the aircraft, was killed.

The Monarch Sunk.

H.M.S. *Monarch* was sunk off the Scilly Isles on Jan. 20 in accordance with the Washington Treaty. The first attack was made by aeroplanes which registered several hits. Four light cruisers and a destroyer then put in some gunnery practice followed by the 15-inch guns from seven battleships.

H.M.S. *Monarch*, originally named H.M.S. *King George V*, belonged to the *Orion* class which was the first to be fitted with 13.5-inch guns all mounted on the centre line. The *Monarch* was laid down in 1910 and completed two years later at an approximate cost of £1,887,870.

No information is yet available as to the size or type of bombs used by the aircraft or whether they were loaded or blank. In any case it is evident that the Air Ministry has not yet persuaded the Admiralty to allow the R.A.F. to try to sink a war-ship.

The Desert Mails.

In an article in the *Times* on Jan. 22, describing a journey from Beirut to Baghdad by the Desert Mail, the writer says :—

A tall Beduin, mounted on a white horse, rode towards the convoy, signalling to the leader that he wished to talk with the party. He had news of an aeroplane down in the desert, "nine hours' camel ride" further on. "Must be a lame duck from the Cairo air mail," said the convoy leader, and the cars hurried on at an increased pace. For two hours they sped on, crossing the Wady Hauiran, where low hills on every hand give the country the appearance of an inland sea that has long since dried.

There was no sign of the "lame duck," but in the sky far ahead two 'planes wheeled and circled like birds looking for their mate. As the cars drew near they made a graceful landing, and in a few minutes the men of the air mail and the men of the desert mail were comparing notes. It was a strange meeting—hundreds of miles from civilisation either east or west—and a reminder of the way in which the desert had been bridged on land and in the air. One of the aeroplanes had a spare engine on board, and by the time the car convoy had reached Baghdad the missing wanderer had been found, repairs effected, and it was on its way to Cairo once more.

As a matter of fact, these cases of forced landings on the Baghdad-Cairo flight seem a little too common, and in Baghdad itself one may hear many stories of trouble "out in the blue." Only three days later one of the two rescuing machines had to come down itself and send a wireless message for help. The cause is variously stated to lie in the increased strain put on the machines in the severe climate of Iraq and in the inability of the Air Force to secure fully-trained mechanics at the present rates of pay.

Rugby Football.

R.A.F. v. Bath.—The R.A.F. were beaten at Bath on Jan. 31 by one penalty goal and two tries to one try. The following account of the match is taken from the *Times* :—

With accurate handling out of the question, two strong packs of forwards had a hard and determined struggle, the honours remaining about even. Sq. Ldr. Russell, for the R.A.F., and S. G. U. Considine, for Bath, were the outstanding backs, but on many occasions they were beaten by the mud. Before the interval, Bisgrove and Considine each scored an unconverted try for Bath, and Woodward landed a penalty goal. Flt. Lt. Chick replied with an unconverted try for the Air Force. In the second half Bath again had the better of the play, but the sound tackling of the Service side prevented them from scoring any more points.

R.A.F. (India) Re-Union Dinner.

The second annual R.A.F. (India) Re-union Dinner for officers who have served with the Royal Air Force in India will be held this year at the Savoy Hotel at 7.30 p.m. (for 8 p.m.) on Saturday, Mar. 14 (the day of the R.A.F. v. Army Rugby match at Wembley).

Tickets, 15s. 6d., exclusive of wines. Evening dress and miniatures to be worn. It is requested that applications for tickets be made as early as possible, and accompanied by remittances, to Flt. Lt. F. L. B. Hebbert, Air Ministry, Kingsway, W.C.2, from whom full details can be obtained.

SOUTHAMPTON'S GIFT.

It is announced that the Borough of Southampton, in recognition of the fact that a series of flying boats now being built by the Supermarine Aviation Works, Ltd., of Southampton, have been given the class name Southampton, has decided to present two silver and enamel plates to be affixed on the port and starboard sides of the bows of all the machines carrying this name. One plate will bear the Borough Arms and a suitable inscription, and the other the title and number of the machine.

Although the practice of giving names of towns to certain classes of service aircraft is not new, it has been left to the Borough of Southampton to recognise this with a small presentation similar to the practice that has been in vogue where ships of H.M. Navy named after towns have been presented with a piece of plate for the ward-room table.

Southampton considers the bestowing of its name thus an honour, and it is gratified that it should have come to Southampton through the Supermarine works, because, by its enterprise and persistently progressive policy, this firm has helped to make Southampton a very important centre of the Aviation Industry.

A MOUNTAINOUS AIR RACE.

In an air race over the Zug Spitze (9,720 ft.), the highest peak in Germany, in the extreme south of Bavaria, on the Austrian border, 13 of the 14 competing machines finished the course. Included in these were five Udet, three Dietrich-Gobiet and one Junkers aircraft. The Reichswehr Minister and the Military Commander of Bavaria were present at Garmischpartenkirchen to see the finish of the race

SHALL WE LAUGH?

Under the above heading, the Australian paper *Aircraft* publishes the following paragraph :—"In solemn protest against the R.A.A.F. Pageant, which will be held at Melbourne on Dec. 13, the Australian Section of the Women's International League has passed the following pious resolution :—

We view with horror our Government adopting a method of warfare which has been condemned as an atrocity when practised by others, inasmuch as, wherever it is used, its victims are the helpless civil population.

As Great Britain is the only other country that has held an Air Force Pageant we view with horror the fact that such a demonstration should be condemned as warfare and as an atrocity and that the tens of thousands of the civil population who have already witnessed the R.A.F. Pageant should have been victimised in such a base manner.

THE RHYMES OF RUFUS RUDERBAR.

No. 1.—The Parrot.

[*Natural History Note* :—The Parrot, though a good talker, is one of the poorest exponents among birds of the art of flying.]

The parrot, on a jutting bough,
Explains to all exactly how
All flying should be done;
He gaily talks of spins and loops,
Of dizzy climbs and lightning swoops
All carried out for fun.

He talks incessantly and might
Be thought a champion of flight,
With courage running high;
His words would show he has the skill,
The knowledge, power and the will—
Until one sees him fly.

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THE BEST IN THE WORLD

Some extracts concerning the recent flight of 8,500 miles round Australia from "The Aeroplane" of May 22nd, 1924, entitled

"ON THE AUSTRALIAN TRIUMPH"

"A performance which may fairly be claimed as **the finest flight in the history of aviation.**"

"The durability and reliability shown by the Fairey seaplane and the Rolls-Royce engine have **established once more the reputation of English aircraft** design and material in the esteem of the aeronautical authorities of foreign nations"

RELIABILITY

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England to Australia	11,500 miles
England to S. Africa	6,281 miles
England to Sweden (and back)	2,450 miles
England to Constantinople	2,160 miles
Across the Atlantic	1,890 miles
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England to Madrid	855 miles

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PARIS-LAKE CHAD.—Here are seen the principal officers of the expedition which is at present attempting to fly from Paris to Lake Chad and back on two Blériot 115 biplanes (four 180 h.p. Hispano-Suiza engines). From left to right:—Lieut.-Col. Vuillemin, Col. De Goys, Capt. Pelletier Doisy, and Capt. Dagneaux.

All four are famous as trans-Continental, rather than cross-country, fliers. Colonel Vuillemin flew from Constantinople to France in a day several years ago. Captain Doisy's flight to Indo-China is of more recent fame.

Paris—Lake Chad.

On Jan. 23 the two Blériot 115 biplanes (four 180 h.p. Hispano-Suiza engines), piloted by Lieut.-Col, Vuillemin and Capt. Pelletier Doisy, and carrying Col. de Goys and Capt. Dagneaux as passengers and spare pilots, left Perpignan where they had been forced to land on Jan. 18 owing to unfavourable weather at 07.20 hours, and flying down the Spanish coast over Alicante, Cartagena and the Mediterranean Sea, landed at Oran, Algeria, at 17.40 hours after a non-stop flight of 700 miles.

On Jan. 25 they left Oran at 10.55 hours for Colomb-Bechar on the Algerian-Saharan frontier, a distance of 375 miles, where they arrived at 15.30 hours.

On Jan. 28 they left Colomb Bechar at 08.00 hours and landed at Beni Abbas, 106 miles distant at 09.30 hours. This flight was unexpected as Col. de Goys the commander of the expedition had telegraphed for some spare petrol pumps. Temporary repairs had been made and it was decided to continue to Adrar (Tuat) where the pumps would be delivered by air.

On Jan. 30 the expedition left Beni Abbas at 07.30 hours and landed at Adrar at 10.00 hours. On Jan. 29 it was reported that the spare petrol pumps had arrived at Oran from Toulouse and that they were being sent on from there to Adrar by two military aircraft The expedition will await these before proceeding further.

A Permanent French Gliding Station.

L'Association Française Aérienne has now completed arrangements for the installation of a permanent gliding station at Vauville, near Cherbourg, on the site where the late M. Maneyrol and other pilots were able to put up so many fine soaring performances in 1922.

It is held—and one believes correctly—that the glider, under favourable conditions, can serve many useful experimental purposes at a minimum of cost. In particular, it is suggested by a writer in *Les Ailes* that the problems of control beyond the stall can be studied under conditions more nearly representing those of the real aeroplane at a minimum of expense and of danger by the use of gliders, than by any other means. There appears to be a good deal of sound sense behind this suggestion.

Other objects in view are facilities for elementary flying instruction, and for the popularising of gliding as a sport.

The new centre is to be known as Camp Maneyrol and is to be equipped with a large permanent shed for machines, a workshop, an office, and a dwelling for a caretaker. A road is to be built to facilitate the return to the camp of machines which have landed on the sands below. The ground provides good landing facilities, and such obstacles as exist are to be removed. The ground slopes towards the west, and is open to uninterrupted winds from the sea, giving unusually good facilities for the use of ascending currents. The station will be ready for use during the coming summer.

L'Association Aérienne Française has received the encouragement and presumably some assistance from the Under-Secretary of State for Air and from the municipality of Vauville.

Gliding.

On Jan. 28 at St. Rénny, near Marseilles, Lieut. Thoret on a Hanriot school biplane succeeded in remaining in the air for 2 hrs. 26 mins. with a passenger with his engine stopped, this flight constituting a "record" for a "glide" carrying a passenger.

Lieut. Thoret, who has specialised in gliding, invariably uses a standard training aeroplane, using his engine to get off and gain a little height thereafter switching off and gliding in the approved manner.

The flight was to inaugurate the opening of a new landing ground at Istres which has been laid out specially for instruction in gliding.

An Italian Long Distance Flight.

Major di Pinedo, Chief of the Italian Air Staff is to start on a flight from Rome to Sydney and back in May of this year. The route chosen for the flight is: Rome, Athens, Egypt, Red Sea to the Indian Ocean, along the Asiatic coast to Tokyo, whence he will cross the Pacific direct to Sydney. The total distance of the return flight is about 34,000 miles.

The necessary preparations for the flight are now going forward.

Major di Pinedo, who has already made numerous long-distance flights on Savoia seaplanes, will use a Savoia S.16 flying boat (400 h.p. Ansaldo engine) which will be fitted with tanks permitting a non-stop flight of 10 hours.

Other long-distance flights are in course of preparation, including, it is reported, one to Tokyo and back.

Junkers in Persia.

On Dec. 18 Lieut. Mittelholtzer, of the Swiss Army, left Zurich on a Junkers monoplane to fly to Teheran. On arriving at Smyrna he was detained by the Turkish authorities, but was allowed to proceed after some days' delay. On Jan. 24 he arrived at Baghdad.

He is proceeding to Teheran to act as instructor at a flying school recently established there by the Junkers Co.

In addition, the Junkers Co. has been appointed by the Persian Government to operate a regular air service between Teheran and Baghdad three times a week under a ten-year contract, the Persian Government paying a monthly subsidy of 3,750 tomans (approx. £600).

Big Polish Orders in France.

In the reorganisation of the Polish Air Force it has been decided to standardise the types of single and two-seater aircraft. In this connection large orders have been placed in France for new aircraft and one factory has obtained the licence to repair and construct these types in Poland. The types chosen are the Potez XV two-seater reconnaissance biplane (400 h.p. Lorraine-Diétrich engine) and the Spad 61 single-seater fighter (450 h.p. W-type Lorraine-Diétrich engine). 150 of the former and 300 of the latter have been purchased in France.

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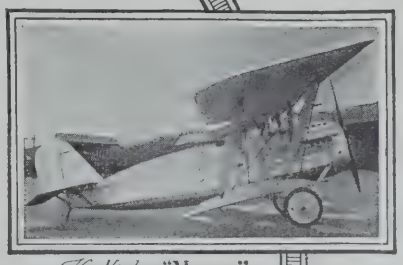


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LESSONS IN AIRCRAFT DESIGN FROM A STRUCTURAL ENGINEER.

It is generally claimed that the modern aeroplane designer has nothing to learn from any other branch of engineering in regard to the efficient use of materials for the production of structure of the maximum strength and the minimum weight. It is therefore distinctly interesting to find among the recent Technical Notes issued by the United States National Advisory Committee for Aeronautics, one dealing with the structural design of aircraft written by one Charles Ward Hall.

Mr. Ward Hall, one is told on reliable authority, is an engineer who has been intimately concerned with the structural design of many American "sky-scrapers," and who is recognised in America as an authority on the theory of structures. The American multi-storied building is undoubtedly a remarkable development of the structural engineer's art. When one comes to think of it the frame of a sky-scraper must call for very great skill in structural design. With their relatively small base area and great height, bending stresses due to wind forces, and to non-uniform distribution of the inmates and of furniture, etc., must be serious factors, and the compressive loads on the lower part of the framework must be enormous. It is fairly obvious that every effort must be made to reduce the structure weight to the minimum which is consistent with safety, and that there is a very strong incentive to a close study of the refinements of structural design in the case of buildings of so special a form.

In any case Mr. Ward Hall has evidently given the subject of aircraft structures some considerable amount of attention, and in conjunction with the U.S. Bureau of Naval Construction and the Curtiss Co. he has designed the structure of an experimental aeroplane known as the type F.4C.1, which is a refined all-metal version of the well-known T.S. type.

The Technical Note already mentioned gives an outline of the methods of detail design which have been adopted in this instance.

In this note the author divides the structural members into four groups (1) subject to tension, (2) subject to pure bending, (3) subject to compression, and (4) subject to combined bending and compression. Tension members present no difficulties, involving a problem essentially of quality of material.

Bending loads without appreciable tension or compression occur in such parts as axles and tail-skids. For axles the best way of keeping down weight is to be found in choosing a tube having the best ratio of thickness to diameter for the material used. Standard hubs however limit the designer to the use of heat-treated steel axles, but in some cases weight may be saved by housing a short length of this steel tube in a larger duralumin tube. With a hinged axle the bending moment varies with distance from the undercarriage struts and weight can be saved by turning or grinding the tubes to a tapering wall thickness, but the eccentricity of commercial tubes renders this process risky.

For members in which direct compression predominates, failure by crippling is retarded by fixing the ends, or by stiffening the strut towards the centre by increasing the cross-sectional area towards the middle. A method specially applicable to open, hollow sections, such as angles, is that of gradually varying the width of the flanges, keeping the apex of the section straight. This leads to a curved neutral axis for the member as a whole, and consequently the compression load produces a bending moment which tends to increase the compression in the apex of the section and relieve that on the edges. As such sections usually fail by buckling of the free edges, this method of construction strengthens them appreciably. The method resembles in effect the method of bending back the free edges towards the neutral axis, adopted in Zeppelin girder-work. But whereas the Zeppelin method means adding material to support what would be free edges, the latter method involves reduction of the flanges at the ends. This method has been adopted for rib webs of duralumin and it is found that members so designed fail either by twisting of the whole member or by bending, which puts the free edges in tension and allows them to develop their full tensile strength.

A method of fixing tubular drag and interplane struts which seems to have great merits, has also been developed. The tube is fitted with end caps (10) Fig. 1, having spherical sockets which bed on the spherical head of a bolt (12) passing through the spar. A pressed wire fitting (9) is threaded on the bolt to take the drag or interplane bracing.

The strut tube is free to align itself, and therefore inaccurate alignment of the structure during erection does not strain the structure. As loading is applied, the ball-head of the bolt is pressed into contact with the tube-end socket, and produces a frictional fixing moment which is proportional to the load, to the coefficient of friction between the surfaces and the radius of the socket. This fixing moment can therefore be computed directly. For the drag strut shown (11)

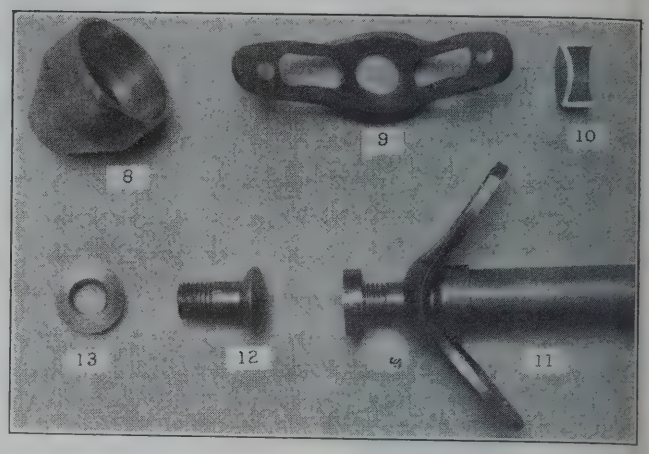


Fig. 1.

Fig. 1, which is $\frac{5}{8}$ in. diameter by 25 ins. long, and rests on a ball-head of $\frac{3}{4}$ in. radius, the fixing moment was sufficient to give a valve of K in the Euler strut formula of from 3 to 3.25, with commercially-straight tube. A spherical end socket for a large strut is shown at (8) in Fig. 1.

The deep cupping of the wire strap (9) Fig. 1 is arranged so that the wire axis intersects the bolt axis on the centre line of the spar. Tests show that the fitting fails by shear of the bolt without perceptible bending.

An ingenious form of end fitting for a tube which is required to develop the full strength of the member in tension is shown in Fig. 2. Here (14) is a lug to fit into the tube. In the part extending into the tube a fairly deep groove is turned. A ring (15) is slipped over the tube, the lug inserted, and the ring is then compressed round the tube so as to force the tube into the groove in the socket. The complete joint is shown at (18) and at (16) and (17) sections of

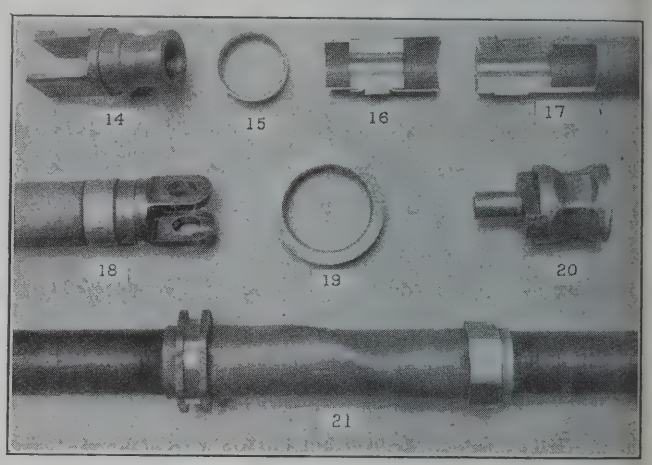


Fig. 2.

similar joints between tubes are shown. Mr. Ward Hall states that this type of joint is not limited to very ductile material, but can be employed on material giving only 4 per cent. elongation on two inches, if proper proportions for depth of the annular depression, curvature of fillets, thickness and diameter of tube, and length of the compression ring are used.

By machining the inner member to a polygonal cross-section (20), a joint (21) giving the full torsional strength of the tube can be produced.

For members subject to both bending and compression—such as spars—the author describes methods of reducing the maximum stresses sustained. An upper spar in a biplane under maximum load—as in pulling out of a dive—is in bending from lift loads and under the compression resultant from the load in the lift wire. The lift load causes an upward deflection between supports, and the compression load produces a further bending moment caused by this deflection. With a spar which is straight when unloaded, the deflection near failure may be quite large, and the extra stress due to this cause is important. If the spar were to be curved when unloaded in the opposite sense, so that at the maximum designed bending load it becomes straight, then the end loading produces no bending moment, and the maximum stress is considerably reduced. Fig. 3 (1) shows diagrammatically the unloaded shape of spars so designed.

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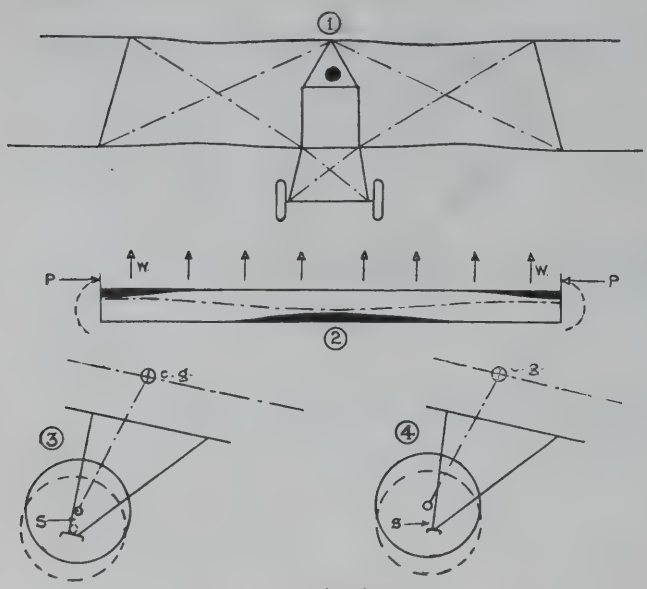


Fig. 3.

In order that there shall be no bending due to the end load it is only necessary that the neutral axis of the spar shall be straight when the load is applied, or curved in the opposite sense to the deflection produced by load when the member is unloaded. This form of curvature may be produced by appropriate changes in the cross-section of the upper and lower flanges of the spar. If in a uniform spar (2) Fig. 3 material is removed from the ends of the lower flanges and from the middle of the upper flanges, indicated in solid black, the neutral axis will be cambered as indicated by the dotted line, and will tend to become straight under load. In this case material is removed to increase the effective strength of a spar.

In upside-down flight the lower spars are in compression, and the deflection due to load is in a reverse direction. These spars may therefore usefully be cambered in the opposite sense to provide for upside-down loads. Then in normal flight the tension load produces a bending moment of opposite sign to that due to lift load and reduces the stress.

In the F.4C.1 built up spars with "flanges" of tube tied together by diagonal tube bracings were used. The spars themselves were initially cambered by about $\frac{1}{2}$ in. in 100 in. bay, and the neutral axis was further cambered $\frac{1}{4}$ in. by using three tubes at the ends of the upper flanges and for the middle third of the lower flanges, but only two tubes in the other parts of each flange. One length of such a spar was tested to destruction under loading corresponding to flight conditions. It failed after a deflection of slightly over 1 in., sustaining a load equal to twice the pin joint Euler load for bottom flange only regarded as a column of the length of the drag bay. It failed by sideways deflection of the bottom flange only at a point near the centre of the span. Fig. 4 shows this spar.

Where spars are pin-jointed at their ends, the bending moment at the joint is nearly zero if the connecting pin is central or if no end load exists, and the maximum stress in the mid-span portion is much greater than would be the case were the spars continuous. When there is an appreciable end load it may be an advantage to place the pin eccentrically and nearer to the flange most stressed by the combined bending and end load—that is, towards the top in an upper and towards the bottom in a lower spar. This position of the pin produces a bending moment opposite to that caused by the lift load, and similar to that which would be caused were the beam continuous. When wing tips are unsymmetrical in plan, there is usually a difference in the overhang of front and rear spars beyond the outermost strut, which leads to a difference in the ratio of end moment to centre moment in the outer spar bay. By making the line of the lift wires intersect the spar neutral axis beyond the strut in the spar with the longer overhang, and within the strut in that having the shorter overhang, this difference may be reduced or possibly removed.

Another case of eccentric connection which can usefully be employed to reduce stresses is shown in the case of the normal Vee type landing gear. This is shown diagrammatically in Fig. 5 (3), where the dotted line shows the wheel unloaded and the full lines the position when the shock absorber is extended. The front strut usually inclines forward and downwards and in many landings the rear strut must be in tension and by its connection to the front strut produces bending therein. The shock absorbers are carried behind the strut and so produce further bending in the same direction. By fitting the axle guides ahead of the front strut (4, Fig. 5), the maximum bending in the front strut can be reduced very appreciably, and consequently weight can be saved.

Mr. Ward Hall concludes his dissertation by remarking that the particular cases quoted above are by no means the only ones to which such methods as he suggests may usefully be employed, and that if these methods are applied to every detail throughout a design the accumulated saving in weight may reach a surprising total.

And to illustrate this he gives a schedule of weights for the bare structural frames of the F.4C.1 designed on the lines indicated, and the corresponding schedule for the T.S. machine which is the prototype of the F.4C.1. The T.S. is regarded as an excellent example of what can practically be achieved in light wooden construction. The F.4C.1 has passed all the strength tests called for by the Navy Department, but its structural parts weigh 164.5 lbs. as against 358.25 lbs. for the T.S. The F.4C.1 figure is 46 per cent. of that for the T.S. The T.S. type is a 2,025 lbs. 220 h.p. machine and the saving of 194 lbs represents therefore nearly 10 per cent. of the total loaded weight, which is well worth saving.

It is stated that the F.4C.1 proved to be extremely costly to build. This is quite believable, but not necessarily a good reason for not having built it. It is essential that aeroplanes should be improved and one method which can be pursued is that of reducing structure weight. To be of practical value such a reduction must be possible at a reasonable cost, but it is one step towards doing a thing cheaply to have done it at all. Finding out how things can be done is usually an expensive process and the expense has to be faced in order to achieve the ultimate end of finding out how to do them cheaply.

Moreover it is not generally appreciated how valuable improvement of this type really is.

The cost of the structural frame of an aeroplane is far from being its whole cost. For such a machine as the T.S., built in this country, this particular part of the cost would not amount to more than about one-third of the total cost if engine and equipment is included. If one assumes that the cost of the structure varies inversely as the weight, saving half the structure weight doubles the structure cost, but only adds 33 1-3 per cent. to the total cost, while it increases the useful load—for the T.S. case—by about 180 lbs. So that unless the useful load of the T.S. class was already at least 540 lbs.—which it pretty certainly was not—the useful load for precisely the same performance can be increased in at least equal proportion to the cost.

It may here be said that at least some of the methods outlined by Mr. Ward Hall have already been adopted by aircraft designers in this country although for reasons which need not here be discussed it has not previously been possible to refer to them in public. Nevertheless Mr. Hall appears to have attacked the structural problems presented by the aeroplane with a mind unfettered by conventional practice and to have shown clearly that there is still room for a good deal of development in the technique of structural design and that the aeroplane designer can still learn from the experience of structural work of a widely different character.

There is no doubt whatever that a considerable amount of weight could be saved in the structure of the average aeroplane by the adoption of methods similar to those outlined above. It is very frequently possible greatly to reduce the maximum stress in a given member by quite minor rearrangements such as those mentioned in regard to undercarriage members and to use offset connections for bracing wires to give an increased fixing moment to a strut or to produce a moment of the opposite sign to that due to direct loading of a spar. Bent struts—that is struts so tapered that they will inevitably fail in a predetermined direction—can be used to advantage in all cases where support against failure in that direction can easily be given. For instance, in fuselage struts a light wire can be used to support a strut from failure



Fig. 4.—Part of Wing Spar after loading to failure.

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by bending outwards. If the strut is biassed so that it will certainly deflect in this direction a cross-wire coupling corresponding struts on two sides of the fuselage will support both of them and appreciably increase their strength. If they are unbiassed and equally likely to fail by buckling inwards or outwards, no such coupling is of great value.

The application of such methods of saving weight is likely to involve a good deal of additional work of a highly skilled kind in the drawing office, and some considerable increase in manufacturing costs. It is however believed that the results will amply repay this increased trouble and cost.

It is however necessary to recollect that British aircraft designers will have to overcome another and somewhat more serious difficulty in any attempt to reduce structure weights appreciably. To submit to the Air Ministry for approval, either for a Certificate of Airworthiness or for a competitive service type, a design based on a structure weight percentage notably less than the average is merely to ask for trouble. One will probably be told that the figures submitted for weight cannot be achieved and that the design—if for a civil machine—will be stressed on the Air Ministry's weight estimate, or in the case of a service type the design will be passed over.

Personally one has every sympathy with the officials who have to deal with the questions involved in approving new types for strength. Their work will become absolutely impossible if every new type of machine submitted had to be regarded as a special case and the whole design considered in detail. In order to get through their work at all methods must be reduced to more or less of a routine process which shall give results erring—when they do err—on the safe side.

But actually the methods adopted do handicap efforts towards marked improvement in structural design. This is only another instance of the way in which official supervision of design hinders progress in an attempt to play always for safety. The remedy here, as elsewhere, is to abolish official supervision and put all responsibility for design where it properly rests—on the designer. Till that happens aeroplane design in this country will go ahead slowly, but neither very safely nor very far.

The Testing of Silver Spruce.

By H. T. Wood Smith.

In view of the scarcity and variable quality of the available supplies of Silver Spruce it is becoming of increasing importance to arrive at a method of inspection which shall be both rapid and accurate.

While visual inspection by a timber expert is of the utmost importance in the primary stages of selection and purchase, and can be relied on for the elimination of bad, unsuitable or diseased timber, no visual inspection can possibly be relied on to indicate the actual strength of the timber.

The present limiting stress on which timber strength is calculated is based on a figure which, though very low, in comparison with the maximum that can be obtained nevertheless exceeds that of quite a considerable portion of apparently good timber now in the country: in other words, to depend on visual inspection alone would mean the passing of spruce that would be definitely under the calculated strength.

In view of these difficulties it was decided to instal in the test room of the Fairey Aviation Company Limited, an organisation for testing the timber of every spar made in addition to the check tests made on the separate planks as the timber was delivered. To do this a standardised specimen $\frac{1}{2}$ in. $\times \frac{1}{2}$ in $\times$ 12 ins. was cut from the ends of each spar and a special bending test machine, adapted to apply a bending load at two points with the test piece supported at the ends, was constructed. Limit gauges were made for the test pieces and the process standardised as far as possible.

For every test piece the weight per cubic foot and moisture content were measured, following which the sample was tested for Young's Modulus (E), and the Ultimate Stress as developed. For this purpose the stress occurring at the formation of the initial compression ridges, and the deflection of the specimen when subjected to different bending moments are measured.

Pure compression tests were also made but found to be unsatisfactory, since pure compression is a condition not strictly parallel to the case of a beam. This arises from the fact that in a spar a proportion of the compression stress is set up by bending, and the outer fibres of the timber subjected to stress at a given point are supported by the next layer of material; a fact not taken into account in the normal calculation of limiting stress. The bending tests were therefore considered to be the most accurate and reliable, and did in fact give results much more closely allied to full-scale tests on spars.

The total number of tests naturally grew rapidly, and a watch was kept on the average figures developed throughout the whole series. The average figures for a total of 3,375 tests were :—

Compressive stress developed on appearance of compression ridges	8,613 lbs /sq, in.
Ultimate stress developed	9,774 lbs./sq. in.
Weight per cubic foot	27.1 lbs.
Young's Modulus $(E) \div 10^6$	1.72 lbs./sq. in,
Moisture content, per cent.	18.1%

The worst and best results were as follows :—

$E \div 10^6$	1.27 lbs./sq. in.	2.287 lbs./sq. in.
Compression ridges	7,765 lbs./sq. in.	8,902 lbs./sq. in.
Ultimate stress	7,105 lbs./sq. in.	11,561 lbs./sq. in.
Weight	21.7 lbs./cu. ft.	34.5 lbs./cu. ft.

The operator, working daily on a standardised test, naturally acquired considerable experience and it was noted that a very close relationship existed between the specific gravity of the timber and the Young's Modulus (E) developed. In fact it was found to be almost exactly proportional.

Accordingly a check test was made under my own supervision whereby six standard samples were given to the operator who measured (under supervision) the specific gravity and moisture content. He was then told to fill in a blank test sheet with his estimate of what the Young's Modulus (E) and the strength would be, basing them only on the data he had available from the specific gravity and moisture content. He was able to foretell the actual figures with uncanny accuracy and, in view of the large number of tests available, I consider it can be safely stated that the result of specific gravity and moisture content alone is sufficient without the bending test, to ascertain the quality of the timber as regards the E value and ultimate strength.

Test No.	Weight	Estimated E.	Actual E.	W/E Estimated	W/E Actual.
3258	29.9	1.8	1.82	16.6	16.4
3259	28.5	1.7	1.72	16.75	16.55
3260	28.2	1.68	1.69	16.75	16.65
3261	27.3	1.6	1.68	17.05	16.25
3262	23.7	1.4	1.4	16.9	16.9
3263	23.7	1.4	1.37	16.9	17.3

With further data covering sufficient tests to really establish this fact, it is obvious that a tremendous saving in the testing of timber can be effected and the actual bending test of every spar is not necessary.

Further results of interest are as follows :—

Very high direct compression values usually indicate that the timber is totally unsuitable for spars.

Kiln-dried timber can best be detected by the nature of the fracture in an impact test.

Timber having flash grain is stronger than timber with straight grain having the same E value.

Recent Work on Aerodynamics at the N.P.L.

A paper read by Major R. V. Southwell before the Royal Aeronautical Society on Thursday, Jan. 23, described in considerable detail some of the more recent developments which have occurred in the Aerodynamics Department of the N.P.L., both as regards novel investigation and novel instrumental methods for carrying on experimental work. It is not possible to reproduce this part of the paper, which should be read in its entirety by those who are interested.

At the end of the descriptive section of the paper the author pointed out that during the past few years aerodynamic experiment had been placed on a surer theoretical basis, notably by the Prandtl theory. He believed that in the long run it would prove to be more useful to attack theoretical problems with a view to setting up a sound theory of aeronautics than to give their main attention to experiment for the practical needs of the moment. He was glad to say that during the past few years the individual workers at the N.P.L. and the R.A.E. had been given a large amount of freedom for research work of a theoretical nature, and now that he was about to leave the N.P.L. he could only urge that such freedom should be continued in the future. The work which had to be done before we possessed anything like a sound science of aerodynamics was of an appalling complexity and difficulty, and quite impossible to carry to a successful conclusion by routine methods.

Major Wimperis paid a graceful tribute to the work of Major Southwell and his associates in the past and hoped that when the author departed to another place his successor would live up to the standard which had been set by Major Southwell.

Major A. R. Low said that this country had fallen behind in the development of the theory of aerofoils by its failure to recognise the value of Mr. Lanchester's Vortex theory, which had been taken up with such remarkable success in Germany. The essential weakness of our position was that whereas we had one or two men like Prof. Bairstow and

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Major Southwell who had the ability and the freedom to tackle the problems of aerodynamics, Germany had 20 or so working in harmony one with another.

Commander Hunsaker expressed his agreement with the views proclaimed by the author concerning pure research. He pointed out, however, that while we were waiting for a sound theory of aeronautics, the aeroplane designer still had to try and build improved aeroplanes and to deliver them to a definite time. For that purpose he wanted measurements and he wanted those measurements by next Monday and not later. There were plenty of people who could make accurate measurements, and make them to time-table, and they ought to have some of these in their aerodynamic laboratories to provide data for the designer while the research men were hammering out the theory.

Mr. Handley Page expressed the gratitude of the British aircraft designers to the N.P.L. for the work they had done for them in the past.

[Major Southwell, it may be remarked, is leaving the N.P.L. in July to take up a lectureship in mathematics at Trinity College, Cambridge, where he will succeed Prof G. I. Taylor.]

On Slogans, Carburettors and Experts.

A naval engineer of wide experience writes :—

I must say I agree with you as to the harmfulness of the prevailing craze for "slogans," and to the extent to which designers and manufacturers are forced to modify their designs and productions to meet the requirements of the prevailing slogan, against their better judgment.

It may be very good commercialism but I must say it is rotten engineering.

As you know, there were at one time a lot of (sea) craft engined aero-fashion, and the people in charge were simply plagued to death by this same sloganism. For example the electric starter slogan. Must have electric starters. The High Command, as usual, taking more notice of the slogan than of the opinion of their own experienced and cool-headed technical staff, we had electric starters; lots of them; all as pretty as a box of Meccano. There was the Devil's own job to acquire, in other words to pinch, enough air-bottles and compressors, and to make enough starting valves, to get a reasonable number of craft that could be started when wanted.

Same thing with battery ignition. Some young ass gets a dud magneto, and so someone starts a slogan "give us battery ignition." And orders come from the Grand Vizier. And it is so.

It is the same all through. Take plugs. Any plug will soot up or damp out if the carburettor is bad. And so far as my limited experience of engines goes all carburation is more or less bad. But will anyone put up the modest sum required to develop the only carburettor that will give a perfect mixture under all conditions? No. They prefer to spend the money buying all sorts of comic slogan-advertised plugs.

I can quote examples ad nauseam and unfortunately there is hardly one engineering work undertaken in which the designer is free from this "old man of the sea" cramping his choice of method or choice of material.

Why is it? Generally these slogans are started by some Y.O. who has been through a course, and is therefore possessed of the proverbially dangerous little knowledge. The Seniors, having been taught in the same way and never educated, take it up. And there you are.

I think I told you before that you are wrong in describing bone head as an exclusively Naval complaint. Of course the right way to design anything, and not only an aeroplane, is to use the right material in the right place. This is a platitude unworthy of you. As I said above, the difficulty is that the designer is restricted by the demands of the Commercial Department or its equivalent. And the purchasing public is educated by slogans emanating from the half-educated with jobs to keep.

Don't crab aluminium altogether. Like money it is a good servant, but a bad master.

The solution of the difficulty appears to my mind to be for the Press to launch a slogan that the flying man should fly, and leave the selection of materials and calculation of strengths to the designer, and the carrying out of the design to the engineer.

Unfortunately all flying men's ambitions seem to be to get a job in the real Air Force which as you know stays on firm ground like all good sailors.

I am with you too about the hanging of a Christmas tree about an otherwise clean design. Same thing happens with ships.

Take the "All Big Gun" stunt which was yapped about as a new thing about 1904. You and I remember the old Howe, Rodney and the rest of the Admiral class that interested us so much in the early nineties. Weren't they all big gun ships? Then they plaster them all over with secondary armament sticking out like pins in the effigy of your enemy and where is the "All Big Gun" slogan?

Talking of carburettors I am still full of wonder and admiration at the fact that petrol engines do so well as they do considering the many faults of most carburettors, particularly those in favour for flying.

Has anybody ever dared to lay down the conditions which a satisfactory carburettor should fulfil? No. All you want is to fit a slogan carburettor, because you had a pal who knew a man who got it from a bloke who had flown one in Mesopotamia. Blessed word!

Will any private enterprise put up the very modest sum necessary to develop a carburettor that will function correctly?

These things are not necessarily the function of Government Departments and you cannot blame the Ministry for everything. Commercial interests and advertising interests retard progress just as much as the stickiness of Government departments.

I see in your journal engines advertised as having a consumption of .55 pts. per b.h.p. hour at or about full power. What is their consumption when slowed down, and at intermediate powers? High enough to soot 'em up a bit I guess.

A carburettor should give :—

(a) The correct proportion of fuel to air, not only at a given choke velocity but at all choke velocities, not only with more throttle opening but with all throttle openings.

(b) It should supply the fuel in so finely divided a state and function so that the fine fuel "dust" is so intimately mixed with air that the mixture passes to the engine as a gas to all intents and purposes.

Leave the question of where and how men served in the last war. Most of us served where and how we were jolly well told. But do for Heaven's sake eliminate the self-styled expert, whether he can fly or has flown or not.

It does *not* follow that because a man is a distinguished flyer, he is competent to judge the rival claims of duralumin or wood for employment for specific parts, nor, because his magneto or a particular type of engine once failed him, does it entitle him to legislate for the abolition of magnetos as a means of ignition, or for the elimination of that particular type of engine.

All About Engines.

["Automobile Engines." By Arthur W. Judge. 182 pages, plus vi pages. Chapman and Hall, Ltd., 11, Henrietta Street, W.C.2. 4s. net.]

One may assume safely that every reader of The Aeroplane is also a driver, if not the owner, of an automobile. Moreover a great deal of the knowledge which can be acquired from car work is of use to aviators. Therefore one recommends this book to all readers of The Aeroplane.

Those who had to do with the technical side of the Air Force during the War will remember Arthur Judge as one of the bright particular stars of Orfordness. And others will remember him as the writer of a number of the most useful books ever produced on the design and construction of aircraft. Apparently in these days, when the technical experts of the Air Ministry are thought to know all that there is to be known about aerodynamics, and esteem themselves to know a trifle more than that, there seems to be little or no scope for Mr. Judge's wide and deep aeronautical knowledge. Therefore he has devoted himself to writing about automobiles.

This little book certainly contains more solid and useful information to the square inch than anything that one has met hitherto on the subject. The author begins with a chapter on the combustion process of internal combustion engines in theory and practice. Thence he proceeds to the explanation, diagrammatically and verbally, of the operation of petrol engines. And thereafter he deals with various types of automobile engines.

This particular section cannot fail to be of interest even to those who regard themselves as quite knowledgeable motor-fanciers, for Mr. Judge deals with the internal economy of a number of engines which are better known externally. For example, he gives a lucid explanation of that sadly neglected but potentially valuable engine which is built under the Burt and M'Cullum patents with a single sleeve valve. One has never yet understood why the Air Ministry has never had the pluck to order the building of an authentic aero-engine under this system. One believes that it can be made lighter than the type with the ordinary valve and it seems to abolish all valve troubles. Mr. Judge also deals with supercharged engines and swash-plate engines and he does it all in that clear lucid style which makes his aeronautical work so valuable.

The latter portion of the book is devoted to the lubrication, cooling, testing, maintenance and tuning of automobile engines. One wishes that all the Air Ministry technicians who have such a high opinion of their own knowledge of internal combustion engines could be compelled to learn Mr. Judge's little book by heart and afterwards pass an examination therein on the pain of losing their jobs. It is true that Mr. Judge probably regards his book as being extremely elementary, but one feels sure that the Air Ministry experts would find it highly educative.—C. G. G.



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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 7; Tuesday, 0; Wednesday, 7; Thursday, 8; Friday, 10; Saturday, 8; Sunday, 7.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 23, passengers 61, freight 8 tons.

AIR UNION:
Paris—London: Machines 15, passengers 17, freight 7 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 7, passengers 13.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 2, passengers 6.

Total number of trips by British machines: 23, carrying 61 passengers. Foreign machines: 24, carrying 36 passengers.

Comparative Figures:

For week ending Feb. 1:
Machines, 47; Passengers, 97; Crews, 62; Total personnel, 159.

Corresponding week, 1924:
Machines, 58; Passengers, 112; Crews, 89; Total personnel, 201.

Corresponding week, 1923:
Machines, 29; Passengers, 52; Crews, 61; Total personnel, 113.

Corresponding week, 1922:
Machines, 22; Passengers, 42; Crews, 33; Total personnel, 75.

Corresponding week, 1921:
Machines, 13; Passengers, 8; Crews, 14; Total personnel, 22.

Croydon Notes.

One apologises to one's readers for not appearing in person in this space last week but for that one must lay the blame (or praise, whichever way you like to look at it) on Lt.-Col. Darby for keeping his side of the aerodrome in such a draughty condition.

The past week has been very much better as regards regularity of flying than the previous weeks. Tuesday was a blank day but the services were all in operation on the other days.

The Avro-Rolls-Royce "Commercial" has delayed its arrival owing to the decision of the authorities to convert it into a freighter instead of having it as a passenger machine.

K.L.M. state that this year the London-Amsterdam service will be operated entirely with Fokker machines with Rolls-Royce engines.

A large consignment of bullion arrived at Croydon recently and on arrival was translated to a motor-van and was escorted to London by Mr. Leverton disguised as a young arsenal. The fact that Mr. Leverton did not inform any of his friends of the contents of the van until after it was safely under lock and key is proof of the esteem in which Mr. Leverton holds the said friends.—G. D.

The D.H.34 Inquiry.

Throughout the past week the Court of Inquiry appointed by the Air Ministry to inquire into the accident to the D.H.34 on Christmas Eve at Croydon has been hearing evidence Almost everybody who was remotely connected with the aircraft in question seems to have desired to give evidence and others interested in it for various other reasons have been sitting or pushing in the background.

The most important evidence of the week was that of Mr. Edye, Managing Director of Petroflex Tubing Co., Ltd. With reference to the internal swelling in the piece of petroflex which last week Major Cooper said he regarded with grave suspicion, Mr. Edye said that he has found it possible to produce this swelling by heat and he had little doubt that this particular swelling was caused by the heat from the fire.

Much evidence was given as to the unsuitability of Croydon Aerodrome in its present state for taking off against a south-west wind, which is the prevailing wind in the district. Of course everybody has known and said this for years.

Mr. Pate, a director of D. Napier and Sons, Ltd., stated that Petroflex was not sold as a part of the Napier engine. It now seems to be up to a director of Petroflex to state that Petroflex is never sold with any sort of engine attached to it.

The inquiry was concluded on Feb. 3 and it is probable that a finding will be announced before the resumed inquest on Feb. 12.

[As an expression of personal opinion one would like to point out that so far nobody, either at the inquest or the inquiry, has yet touched upon the essential cause of the disaster. —C. G. G.]

Stag Lane.

The works of the de Havilland Aircraft Co., Ltd., are swelling visibly. This phenomenon is not attributed to over-feeding but to the natural development of a healthy constitution. On the occasion of a recent visit to Stag Lane this expandment was, owing to the recent unpleasantly wet weather, made all the more noticeable owing to the fact that the plodding back and forth of myriads of workmen had transformed the normally dry and tidy sleeper and cinder tracks that lead to the works and inter-connect the various shops, into paths of thick and particularly glutinous mud.

The axiom "things are moving" has a double meaning at Stag Lane.

Concerning the things that are moving within the works little may be said at the moment, but for one who has been accustomed to the topography of Stag Lane an attempt to find the drawing office, to take one instance, would lead one to take the literal meaning of this phrase.

The old drawing office which was housed in a long wooden hut opposite the general offices has now been moved to a new two-storied building erected on the site of the old wood-mill.

This building, which is not yet completely finished, will eventually hold the general offices on the ground floor and the whole of the top floor, which is adequately lighted by large windows and sky-lights, will contain the drawing office.

The old original erecting shop on the left-hand side of the road leading to the aerodrome is now given over to wing assembly entirely.

The greatest alterations however are to be found in connection with the present erecting shops and the large, two-storied shed facing it that previously has been used for storage of aircraft.

The whole of the space that previously separated these two buildings is now being roofed in, which will practically double the area of the total works.

The old two-storied flight shed is now being given the added security of brick walls and the whole of the two floors are now given over to wood-working. The ground floor is used as a sawmill and also a wood store and the upper floor is used for the making of the wood parts of D.H. aircraft. This is well equipped with wood-working machinery and in one corner is found the glueing shop.

The old erecting shop is fairly full and the addition of the new floor space made available by the uniting of the two sheds will allow for considerable expansion and at the same time it will bring the wood-working and erection shops under one roof.

In the erecting shops at the present are the inevitable batch of D.H.9as being reconditioned for the R.A.F., the D.H.54 fast assuming shape, a D.H.51 recently purchased by General Weir and now being overhauled prior to delivery, the all-steel Dormouse, and parts of the D.H.60 or "Moth" which is being produced as "the" two-seater light aeroplane to be fitted with a 60 h.p. air-cooled engine known as the "Cirrus."

The Cirrus engine is a four-cylinder vertical engine, the general arrangement of which is due to Capt. de Havilland.

The cylinders are cast iron with aluminium cylinder heads and overhead valves. The engine is being constructed by a well-known aircraft firm and should be completed by now. It is expected that the Moth, or D.H.60, will be flying by March.

The original D.H.51 has now been fitted with the 120 h.p. Airdisco engine and the D.H. automatic flap-gear, and its performance thus fitted is particularly good. The speed range is now 40-110 m.p.h. This machine is going to Martlesham Heath in the course of a few days for official testing.

It is fitted with one or two home-made recording instruments of extraordinary simplicity, for the determination of stalling angles and stalling speeds.

Recent deliveries of D.H. aircraft have been one D.H.50 to Czecho-Slovakia and one D.H.53 light aeroplane to Russia.

As regards the D.H.54 and the D.H.60 a full description of these machines will soon be published in THE AEROPLANE.

Mr. Cobham in India.

Mr. Alan J. Cobham who has piloted Sir Sefton Brancker from London to Calcutta in a D.H.50 has been making some somewhat spectacular flights in India in the region of the Himalayas. On Jan. 26 he started from Calcutta and flew to Darjeeling, which in itself stands about 7,000 feet above sea level. This he passed at the height of 9,000 feet and then flew towards Kinchinjunga which is the most impressive of all the Himalayas and is the second highest mountain in the World.

The machine was unable to get above 17,000 feet and from this height a splendid view of Everest was obtained and photographs were taken. No untoward incidents were met and no ferocious denizens of the higher Himalayas molested Mr. Cobham in any way. Mr. Cobham's special cloud was left far below.

It seems that with a properly-equipped modern aeroplane of higher power than the D.H.50 it should be possible to land stores and personnel quite near to the summit of Mt.

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Everest and so save the long march which has been necessary hitherto before the assault proper on the mountain becomes possible.

Sir Sefton Brancker has proceeded to Rangoon by sea and Mr. Cobham is following by air. It is possible that they will attempt to return from Rangoon to London in record time.

Some Extension

That usually well-informed paper, *Les Ailes* reports in its issue of Jan. 29, that the British Air Ministry proposes to expend on the forthcoming extension of an alteration to the Air Port of Croydon a sum of £21,750,000 (twenty-one million, seven hundred and fifty thousand pounds). Under the circumstances it is not altogether surprising to find the opinion expressed that the improvements to be effected will scarcely justify their cost.

An Aerial Map of London.

Aerofilms, Ltd., of the London Aerodrome, Hendon, have signed a contract with the City and Provincial Press, Ltd., to make an Aerial Photographic Survey of the whole of Greater London, and work on this will begin within the next few weeks. Over 1,000 exposures will be made and it is expected that the resultant mapping and fitting together of the photographs will take the company's Mapping Department many weeks to complete.

An endeavour will be made to complete the City and West End sections of the map in time for exhibition at the re-opening of Wembley.

The map which is being prepared entirely at the instigation of the City and Provincial Press, Ltd., will cover an area of 100 square miles and is being produced to sell at a popular price. It will be put up in sections, each section covering the complete survey of a Metropolitan borough.

Arrangements are being made whereby anyone may have the exact location of their property clearly marked so that apart from its utility to architects, surveyors, borough councils, estate agents, etc., the map will, from the general public's point of view, possess something of distinctly personal interest.

Finally the map will be produced in photogravure and thereon every street in the Post Office Directory will be clearly named and every place of interest shown.

Anyone interested in this publication, the first issue of which will amount to 20,000 copies, who may either desire a copy for its topographical interest or who may want to have their own particular property marked on it for publicity purposes, are invited to communicate with the City and Provincial Press, Ltd., Red Lion House, Red Lion Court, E.C.4, or Aerofilms, Ltd., London Aerodrome, Hendon, N.W.9.

The Institution of Aeronautical Engineers.

On Friday, Feb. 6, Mr. H. L. J. Hinkler will read a paper on Flying in Australia. [N.B.—This is "Our 'Bert."—Ed.]

On Friday, Feb. 20, Prof. E. G. Croker will read a paper on Photo Elastic Methods of Measuring Stress.

This represents an interchange of dates as between these two papers from those originally announced. Both meetings will be held at 6.30 p.m. at The Engineers' Club, Coventry Street, W.1.

British Aircraft Interests in Roumania.

It is reported in a French paper that an agreement has been made between the Roumanian Government and Armstrong-Whitworth, Ltd., for the erection of an aircraft factory in Roumania. A company will be formed in which the Roumanian Government will hold 60 per cent. of the capital and Armstrong-Whitworth 40 per cent.

It will be remembered the Armstrong-Whitworth Aircraft, Ltd., have already received an order for 70 Siskin V (380 h.p. Jaguar engine).

Canadian Spruce for British Aircraft.

According to the *Times* a contract calling for the supply of two million feet of aircraft spruce in the current year and subsequent continuous shipment, has been made between Vickers, Ltd., and Mr. F. L. Buckley, of Vancouver. The spruce will be logged in the Queen Charlotte Islands, British Columbia, shipped to Montreal, seasoned there, and will then be forwarded to the factories for use in aircraft construction.

The Gloucestershire Aircraft and Engineering Society.

A society has been formed under the above title by the employees of the Gloucestershire Aircraft Co. Ltd. The chief aim in forming this Society is to bring about closer co-operation between the works and design staffs by having frequent meetings, lectures and discussions which will be of interest to all.

Members are being encouraged to give lectures and to start discussions and a Model Club is already in full swing. The first flying meeting for this section will be held in March. The flying-stick type is being eliminated as far as possible, the object being to encourage the building of machines which have some similarity to full-sized machines.

The Gloucestershire Aircraft Co. have given permission for the use of a workshop in their works for the use of those who have no facilities of their own for making models.

A number of people outside the Gloucestershire Co., well-known in aviation, will be asked to lecture to the Society from time to time.

The Origin of the Irish Air Mail?

The following is an entirely imaginary account of how possibly the partnership of Mr. Greig and Mr. Higgs, which is the organisation running the Belfast-England Air Service, came into being:—

"I am going to run an airway which I hope may be a fairway
From Belfast to Carlisle, Mr. Higgs"
Said Mr. Greig.
"I think that will be splendid as it's just what I'd intended
So I'd simply love to help you, Mr. Greig."
Said Mr. Higgs.

"We will carry tons of cargo and we'll not place an embargo
Upon passengers in hundreds, Mr. Higgs"
Said Mr. Greig.
"But the parcel and the letter post will pay us vastly better
In the long run. Don't you think so, Mr. Greig?"
Said Mr. Higgs.

"We'll be wanting something shifty so we'll buy a D.H.50
And we'll ride inside on wet days Mr. Higgs"
Said Mr. Greig.
"And a D.H.9 is handy. Will you join me in a brandy?
For I'm sure that that would help us Mr. Greig."
Said Mr. Higgs.

"As to engines, there's the Puma. We shall *not* find that a stumer.
I assure you that is certain Mr. Higgs"
Said Mr. Greig
"And as something of a shocker we might even buy a Fokker.
That would rouse the Carlisle burghers, Mr. Greig!"
Said Mr. Higgs.

"When the weather waxes wintry we'll transport the Irish 'gintry
To Stranraer instead of Carlisle Mr. Higgs"
Said Mr. Greig
"And with bags and bags of mail from Belfast we'll daily sail.
What about just one more brandy, Mr. Greig?"
Said Mr. Higgs.

PERSONAL NOTICES.

Forthcoming Marriages.

ANDERSON—CHAMBERLAIN.—The marriage of Mr. David Forgham Anderson, D.F.C., R.A.F., son of the late David Paterson Anderson and Mrs. Anderson, of "Avoca," Farnborough, Kent, with Alina Birge, daughter of the Rev. W. I. and Mrs. Chamberlain, of Tarry Town, New York, will take place on Feb. 21, at Sleepy Hollow Church, Tarry Town.

IRWIN—TEACHER.—The engagement is announced between Flt. Lt. Herbert Carmichael Irwin, A.F.C., R.A.F., second son of the late Thomas Francis Nesbitt Irwin, Donnybrook, Dublin, and Mrs. Irwin, Fron Deg, Rhos Neigr, Anglesey, and Olivia Marjory Macdonald, daughter of Dr. and Mrs. Charles C. Teacher, Hollington, Fareham, Hants.

PIPON—DE KYRPOTINE.—The engagement is announced between Flt. Lt. A. R. T. Pipon, D.S.C., only son of Mr. and Mrs. A. T. M. Pipon, of Beechcroft, Goring, Oxon, and Olga de Selivanoff, widow of Lt. de Krypotine, of the Russian Imperial Guard.

Births.

BALDWIN.—On Jan. 27, at Birmingham, the wife of Sq. Ldr. F. A. Baldwin, R.A.F., Heliopolis, Egypt, and Springfield, Acton, W.3—a son.

BRACKLEY.—On Jan. 30, at 1, Montagu Place, Montagu Square, W., the wife of Maj. H. G. Brackley, D.S.O., D.S.C.—a son.

CATCHPOLE.—On Jan. 29, at Karachi, India, to Gwen, wife of William Catchpole, R.A.F.—a son.

RIVERSDALE ELLIOT.—On Jan. 31, at Ardlethen, West Heath Avenue, Hampstead, to the wife of Flt. Lt. Riversdale Elliot, R.A.F.—a son.

SWOFFER.—On Jan. 30, at 4, Keynsham Road, Cheltenham, to Joan, wife of F. A. Swoffer, M.B.E., R.A.F.—a daughter.

WARD.—On Jan. 22, nursing home, Camborne, Cornwall, to Dulcie, wife of Flt. Lt. A. A. Ward, R.A.F.—a daughter.

WEST.—On Jan. 27, at 2, Avenue Mansions, Folkestone, to Winifred, wife of F. West, V.C., M.C., R.A.F.—a son.

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THE NEW GENERATION.



(Royal Air Force Official Photograph.)

THE R.A.F.'S LATEST:—Here is seen a squadron of Vickers Vernon troop carriers (two 450 h.p. Napier Lion engines each) lined up on Hinaidi aerodrome, Baghdad. These machines are used by the Royal Air Force as bombers and troop-carriers, and are also employed for transporting mails on the Cairo-Baghdad Air Mail route. All soldiers will probably be struck by the curious resemblance of this picture to a distant view of the elephant lines in India.

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ON THE NEW RUSSIAN LEADER.

On various occasions in this publication the suggestion has been made that those who are interested in the making of history and the advent of the next war should study the development of affairs in Russia. Russia in its present state is fairly harmless and will be so until some great leader arises, although it is known that the Red Army is intended for the subjugation of the Western *bourgeoisies* and that Russia is endeavouring to raise a vast Air Fleet. And one has indicated that the time has come when that great leader is about due.

One of the straws which show which way the wind blows happened to drift into this office the other day in the form of a letter from the London office of "The Red Cross Society of Russia" asking whether it would be of interest to exchange this journal *"against the 'Aeroplane,' a monthly journal edited by the Society of Friends of Aerofleet in Moscow."*

The quotation is given as it appeared in the letter and one is still happily ignorant of the Russian word for the "Aeroplane." But one takes it as a compliment that our friends the enemy should choose their equivalent of the name of this paper for their leading aeronautical journal.

The curious working of the square-head or Mongoloid or Japhetic brain, whichever one likes to call it, is shown in this community of interests between a Red Cross Society and a Society which exists purely for the purpose of destruction. Still, after all, the connection is perfectly rational in that "the Friends of Aerofleet" exist to provide the raw material (very raw sometimes) on which the Red Cross people work.

The Man and the Hour.

That however is rather by the way. What is much more important is an article which appeared in *The Morning Post* on Feb. 6 concerning the rise of a new personality to power in Russia. This article reads as follows:—

Now that Frunze has by official Decree been appointed Trotsky's successor, it is not without interest, writes our Russian Correspondent, to record some of the details of that person's career.

Frunze, a Moldavian or Roumanian by descent, was born in one of the small towns of Turkestan, in 1885. His father was a stretcher-bearer in the Army Medical Corps of the Imperial forces and his mother a peasant girl from Voronesh. He was educated at one of the Government higher secondary schools in the town of Verny. On his matriculation in 1904 as a student of the Petrograd Politechnicol Institute Frunze immediately joined the Bolshevist wing of the Russian Social-Democrat Party and took an active part in the organisation of revolutionary and subversive propaganda among his fellow-students and the industrial workers of Petrograd.

In 1905 Frunze was entrusted by the Bolsheviks with the organisation of a big strike, and later took part in the Bolshevist Congress at Stockholm, presided over by Lenin. Between 1904 and 1907 Frunze was arrested several times, and was finally sentenced to six years' penal servitude. Having served his term, he settled down in Siberia, was re-arrested in 1915 for defeatist propaganda, escaped from prison and under an assumed name succeeded in penetrating into the war zone on the Russian Western front. In February, 1917, Frunze was at the head of a big revolutionary military organisation with headquarters in Minsk and with ramifications in the 10th and 3rd Army Corps. Under the Kerensky régime Frunze continued his deadly work.

When Lenin successfully carried out his *coup d'état* in October, 1917, Frunze was president of the Soviet in one of the industrial districts near Moscow, from whence he marched to the aid of the Bolsheviks in the Russian capital at the head of 2,000 armed workers and helped Lenin to butcher the young cadets who were putting up a last stand around the Kremlin.

In 1919 Frunze was appointed Commander-in-Chief of four Bolshevist Army Corps fighting Admiral Koltchak on the Turkestan front, and was awarded the Order of the Red Banner for "revolutionary bravery." Later he was appointed Commander-in-Chief of the Turkestan front, and subsequently Commander-in-Chief of the Red forces in Bokhara, and Chief Commander of the Red forces operating against General Wrangel in the Crimea. He was rewarded for his victories—and maybe for his exceptional brutality—with a gold sword, a new Revolutionary order, and a portrait of Karl Marx.

In 1921 Frunze became Commander-in-Chief of the Armed Forces of the Ukrainian Soviet, and from this year his intrigues against Trotsky may be dated. Last year he became Acting Commander-in-Chief of the Red forces, only to carry on his intrigues against his chief and rival which culminated a few weeks ago in Trotsky's downfall.

While an expert in the art of intrigue, Frunze has neither the talents nor the personality of his predecessor, and enjoys practically no popularity among the Red troops.

The Historic Parallel.

Many months ago it was suggested in this paper that just as Napoleon was given his opportunity by Barras, the Minister for War under the Directoire in 1796 (seven years after the outbreak of the French Revolution), so some brilliant young Russian commander might be building up a similar career under Trotsky. It was also suggested that the great Russian leader would certainly not be an ordinary Muscovite Russian but would probably be of some other strain which had in it that genius for leadership which is lacking in the Muscovite.

It must be remembered that Napoleon was neither a Frenchman nor a Corsican. His parents were Italian, and like so many other great men he owed his greatness to qualities derived from his mother rather than from his father. It would seem that he was a throw-back to some conquering ancestor of the great days of Rome. From this point of view the ancestry and career of Frunze are worthy of consideration.

In the first place it will be seen that he is of Roumanian descent. Now the Roumanians are not a great fighting nation, as was proved in the War 1914-18. But in proportion to the total population Roumania produces a very high percentage of brilliant intellects. And the Roumanians pride themselves on their descent from that Roman colony which was the outpost of the Empire against the Scythian hordes of the period. Therefore it is just as possible that Roumania may to-day throw up a great military genius as it was that unwarlike Italy of the late Eighteenth Century should throw up a Napoleon.

On the other side it is reported that Frunze's mother was a peasant girl from Voronesh. Now Voronesh is a city which gives its name to an area in Southern Russia bordering on the territory of the Don Cossacks and there is a distinct possibility that this peasant girl is of Cossack blood and therefore of the finest possible fighting strain. The combination of remotely Roman ancestry with Cossack blood might very easily produce the genius for which Russia is waiting.

One does not suggest that Frunze is in fact the combination of Napoleon and Attila which would be necessary to organise and lead a conquering Russian Army into Europe. But one does suggest that this man and his career in the immediate future are very well worth watching.

It will be seen that he is barely forty years of age and is therefore just approaching the prime of life. His past career shows him to be ambitious and he is young enough, provided he is a genius, to fulfil any ambition.

It is obvious that he is essentially a soldier. He was born and bred in the Army under the Tsar, so that all his upbringing and the ideas of his youth are of the Army. He is obviously well educated. The adventures of his youth, as a strike organiser at the age of 20 and as an organiser of revolution at the age of 30 show him to be a man of considerable organising power.

At 34 we find him defeating Admiral Koltchak, who was himself a very competent fighting man. And his defeat of General Wrangel, supported as he was by British and French

staff officers and material, and by several units of the Royal Air Force against which Frunze had nothing to oppose in the air, proved him to be at any rate a very competent military commander.

Such a career hardly bears out the statement of the writer of the article that Frunze has neither the talents nor the personality of his predecessor. The fact that he enjoys practically no popularity among the Red troops counts for very little. Napoleon as a young officer was not popular. But when he acquired high command he made himself popular by artificial means, purely as a matter of policy. And if ever there was a master in the art of intrigue it was Napoleon.

Again one emphasises the fact that one is not prepared yet to regard Frunze as the Russian Conqueror. But one does advise those who will be the leaders of the King's Fighting Services in the next war to acquire all the information possible about the personality, and to study assiduously the operations, of the new Russian leader.

There are in him all the components of a Russian Napoleon. The man may not be up to the weight, he may not be a genius, but it is foolish to under-rate an enemy and this man deserves careful watching.

AN APPENDIX.

The following article appeared in the *Morning Post* on Feb. 10. It forms a useful and educative appendix to the information already published :—

Simultaneously with the appointment of Frunze as Commander-in-Chief of the Soviet Armed Forces the Red Army, writes our Russian Correspondent, has been completely reorganised on the basis of fifty-six divisions, each cavalry and infantry division having attached to it one Tank unit, one Gas unit, an anti-aeroplane battery, one mounted machine-gun unit, and so on. Each division will also be supplemented by an air squadron of four aeroplanes armed with gas-bombs.

The Soviet military authorities have just completed the establishment of new Air Force bases in Proskuroff, Sebastopol, Rostoff-on-Don, Kharkoff, Tsaritsin, Lyski, the village of Fili, near Moscow, Tashkent, and Omsk. Three hundred and fifty aeroplanes of the Fokker and Junker types, ordered by the Soviet Government in Holland, Spain, and Italy, will be delivered by next March; and Rakovsky has placed with a well-known British armament firm an order for ten guns of very large calibre and for six motors of 620 h.p. each destined for the new airships being constructed in Soviet Russia.

A Special Military Commission headed by Luganovsky has recently visited Austria, where 200 aeroplanes, 500 field and heavy artillery pieces, 3,000 Maxim-guns, and 200,000 rifles have been purchased on behalf of the Red Army and despatched to Russia. Krestinsky, the Soviet Envoy in Berlin, has recently signed a contract with certain German chemical firms for the supply of 2,000 tons of certain chemicals necessary for the manufacture of poison gas.

The Soviet of Peoples' Commissaries has assigned 100,000,000 gold roubles (£10,000,000) from the special secret funds of the Soviet Union for the technical equipment of the Red Army in 1925, and of this sum 25,000,000 gold roubles have already been spent in Austria and Germany for recent purchases.

Unschlicht, who has held high office in the Cheka organisation, and is well known for his brutality, has been appointed to succeed Sklansky as Assistant-Commissary for War and Vice-President of the Revolutionary Military Council.

[The details of equipment may be largely imaginary—for example four gas aeroplanes per division seems odd, apart from the fact that gas-bombing from the air cannot be worth while so far as present knowledge goes. But rumours are always based on facts, and the facts here-above related may be regarded as quantitatively if not qualitatively correct.—C. G. G.]

ON A VISIT TO AMERICA.—VII.

THE SERVICES.

Having described fairly fully the firms which matter in the United States—they being the basis on which the effectiveness of the Flying Services depends—it is fitting and right that one should now discuss the Flying Services themselves, for it is in the Services more than anywhere else that the United States differ from the Mother Country, and yet even here English contrariness persists. One hopes that officers and men of the R.A.F. will find this article of interest, for it may help them quite a great deal when brigaded with American units in the next war if they have in mind the differences between the U.S. Services and our own.

In the United States the Army is the Senior Service and the Navy the Junior Service. Historically the U.S. Marine Corps is the oldest of all, but as it is so mixed up with the Navy and has no separate Air Service it may be left out of the question for the purposes of this argument.

Where the English contrariness of the native-born American comes in that, as in England, the Junior Service is regarded as socially superior to the Senior. In England, Scotland and Ireland (and such as there are in Wales) the elder sons of the best families go into the Army (either through Woolwich, Sandhurst, the Militia, or a University), where they cannot live adequately on their pay, so that if they want to do things well they find that serving their country is quite costly. Younger sons of great families, or sons of decent families without money, go into the Navy, through the Royal Naval College at Dartmouth, and are able to live after a fashion on their pay.

Incidentally it is hoped that in a generation or so the very best people will send their very best sons to the Royal Air Force College at Cranwell, and will send those who are not quite so good into the R.A.F. with Short Service Commissions—unless by that time some way has been discovered for abolishing the somewhat unpleasing distinction between Short Service and Permanent Officers. Thus the youngest of all the Services will become socially and morally the best of all the Services, as befits the official First Line of Defence. But in the meantime perhaps the social status of the R.A.F. had better not be discussed. One can at any rate say that its manners and customs in Mess, if not those of the best county families, are certainly more pleasing than those of a Naval ward-room.

The English System.

Now—chiefly for the benefit of American readers of this paper, who apparently are more numerous than its total circulation if one may judge by correspondence—one feels that one ought to explain the result of English system. It is briefly this :—

The Army officer goes from a first class public school, which in England is naturally a large and expensive private school and not a public school at all as understood in America, to Woolwich (for the Engineers or Gunners) or to Sandhurst (for the rest of the Service) and has acquired the outlook and tone of an English gentleman before he gets there. At those institutions he has rather more liberty than a student at a University and he is consequently able to frequent the best society. Even if he is poor he gets to know the best people through the other men of his year.

Thereafter, when he joins the Army wherever he is stationed he is accepted, by reason of holding the King's Commission, in the best set—which does not by any means imply the richest set. Consequently he develops as a man of the World with an all-round knowledge of men and of the bigger affairs of life. Also, he lives with his regiment, except when doing special courses, and his men become part of his family life, or at any rate if he is what he should be the family life of his men becomes part of his own life.

Thus it comes about that the British Army Officer is accepted wherever he goes as the highest type of the English gentleman. He may not be brilliant intellectually, but he is at any rate a man of honour, with very few exceptions—and, as the foreigner so often finds, the officer who appears the least brilliant frequently hides much wisdom under a mask of apparent stupidity or stolidity.

The Naval officer, on the other hand, is caught young. He goes from a preparatory school to Dartmouth instead of to a public school. At Dartmouth he is trained in the customs of the Navy as inherited from Nelson's day and is taught Naval technicalities instead of The Humanities.

Thence he goes to a ship where he sees much of the World's geography, but always through the limits of a ship's port-hole, so to speak. His knowledge of the places at which he lands is limited to the so-called pleasure-haunts of seaports and more or less riotous parties at the houses of such local rich people as like to entertain the Navy, or else to public balls given in honour of his ship, squadron or what-not.

Being so much away from England in his early days in the Navy he misses the civilising influences of home-life which an Army officer gets while on leave from Woolwich or Sandhurst. And in many cases, the home-life of a Naval officer is not on the same social grade as that of a soldier.

In a Naval ward-room conversation is not on the intellectual plane of that in an Army Mess, where " shop " is barred and only topics of general interest are encouraged. And the language of the ward-room is distinctly more lurid than that which would be permitted in the Mess of a good regiment. The mental difference is well put in the Navy's own definition of the three stages of a ward-room argument,—(A) Unsupported assertion. (B) Flat contradiction. (C) Personal abuse.

And the men of the Navy are not a family in a ship as are the men of a battalion of the Army. They are there for the ship's commission only, and not for life, and return to barracks when paid off. Their officers are with them but not of them.

These being the facts—and one defies anybody in either Service to disprove them—it is not surprising that the Navy, with its limited outlook, should be regarded as socially and



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intellectually the inferior Service (as it proved itself to be during the War 1914-18). Nor is it surprising that with such a restricted round of duties and such a cramped life the Naval Officer should at quite an early age develop what a witty if non-scientific friend calls a species of cerebro-sclerosis,—which, one imagines, is to the brain what arterio-sclerosis is to the arteries, namely, the hardening of the walls into a bone-like substance.

The American System

In the American Services the state of affairs is almost reversed.

The officers of the Senior Service, the Army, are caught young and go to West Point, a huge college on a cliff over the Hudson River in one of the most beautiful situations in the World. And West Point is run almost as a monastic establishment.

An officer of field rank, but young at that, told one that so recently as his days there such a thing as leave was unknown, even for a student to visit his own family let alone for pleasure in New York. He said that for his first two years at West Point he never once left the bounds set by the Authorities.

The course of teaching is complete, but it is teaching and not education. Information is pushed in. Intellect is not brought out. Which is what *e-duco* implies.

The training is hard, but it is also hardening. The result is that the West Pointer is apt to run towards a mind limited by the technicalities of his Service, very much like the British Naval officer.

After he leaves West Point he joins his regiment, may-be in a miserable little garrison town or fort on the Mexican frontier, may-be in the Philippine Islands, may-be in Texas, may-be in an Indian Reservation. In none of such places does he come in contact with such Society as a young country like the United States has produced.

His promotion is entirely by seniority, except in case of War. And in America there is but little of that social influence which in England induces a man to leave the Service and become a country gentleman if at a certain age he has not been promoted beyond a certain rank. Consequently promotion in the U.S. Army is continually jammed.

Naturally, therefore, none can be surprised at hearing the younger officers of the U.S. Army talking disrespectfully of bone-headed Generals who have been dead from the ears upwards since they passed the rank of Major. In fact the attitude towards his senior of the young Army officer whose brain still functions is very much that of the active-minded young officer of the British Navy towards everybody of the rank of Post-Captain and upwards

In the U.S. Navy things are very different. The graduate of the Naval Academy at Annapolis, though he was caught young like our children at Dartmouth, comes out into the World. The American Navy is not dispersed over the Seven Seas to the extent that is the British Navy. It exists chiefly for the defence of its own coasts. And the very best of American society lives on the coast, for the excellent reason that the coastal cities are the oldest and the most civilised.

Consequently the officer of the U.S. Navy, who has plenty of time to spend ashore, constantly meets the best people. Boston, Philadelphia, Baltimore and Washington, all great Naval stations, are also the intellectual and political centres of the United States—if one may be pardoned the Hibernianism of calling a city on the edge of a country a centre.

Washington is not only the capital of the United States politically, it is one of the most beautiful of the World's cities, and it has the atmosphere of World Politics. It is rapidly developing a genuine aristocracy, in that there is a growing tendency for people who have made big money to settle in Washington and take part in those higher politics behind the scenes which move mere political politics, instead of just splashing their money between New York or Chicago and Palm Beach, Fla. And the officers of the U.S. Navy are accepted in Washington Society to a far greater extent than are the officers of the Army.

In the same way, officers of ships stationed at ports in the South have the run of the Winter coastal resorts and of such centres of real culture and old-world civilisation as Atlanta, Georgia, and New Orleans. And those on the Pacific Coast are in whatever may be the best set in San Francisco, San Diego, Seattle, and so forth—not to mention Los Angeles, which at any rate provides experiences for its visitors.

The U.S. Army officer is scarcely known in these centres of light and learning. So is it at all surprising that the best people in the States should regard the Naval Officer, whom they know in their own set, as a being superior to the mere Army Officer of whom they see little and know less?

One says this without any unkindness towards the U.S. Army. Personally one has always found the Regular, with his West Point tradition, a singularly courteous gentleman with that kindliness and friendliness which is so typically American. And one owes a very great deal of the happiness of one's visit to the States to the open-hearted and frank way in which one was treated by the officers of the Regular Army. One writes thus entirely with the intention of giving our own people over here a better understanding of the relative positions of the men with whom they will have to work when the War begins.

At the same time it must be understood that the U.S. Navy suffers in its own degree just as badly as does ours from antiquated Admirals and Post-Captains whose notions of war, if they *have* progressed since Trafalgar, have not come on much since the little affair of the *Chesapeake* and *Shannon*. Like our own Admirals, they cannot regard aircraft as anything more than an auxiliary to the Fleet. They cannot see aircraft as a primary arm.

The science of psychology, whether deliberately studied or merely absorbed unconsciously, is one of the greatest factors in war. And it is just as important to understand the psychology of one's comrades as it is to understand that of one's enemies. If men are to work together they must think together.

Therefore if our own folk have done one the honour of reading so far and if one's good friends in the States have done likewise, one hopes that each will be the better able to understand the mental processes of the other when they come to fight in the same good cause. And so, having established a fairly clear understanding as far as the older Services are concerned, we may now turn to the Flying Services, which in the United States are merely branches of the Army and Navy.

(To be continued.)

The Air Force Estimates.

The Parliamentary Correspondent of the *Daily Telegraph* says that the Royal Air Force, like the Navy, will present to Parliament in the near future estimates revealing an increase on the amounts voted for their respective purposes last year.

It is gathered that the Air Ministry is asking for an additional sum of between £2,500,000 and £3,000,000, but the figures of the estimates have not yet been finally agreed upon with the Treasury.

The Secretary for Air, Sir Samuel Hoare, is an economist, and if, in response to the general appeal of Mr. Churchill to the departments he can even now see his way to effect savings here and there he will undoubtedly do so.

It will be remembered that in 1923 Parliament approved a scheme for the gradual expansion of the Home Defence Force, and the programme requires that a certain number of new squadrons should be created in the coming financial year. This scheme was in no way interfered with during the term of office of the Labour-Socialist Government, and under the present Administration its development will be continued strictly according to plan.

[One gathers from those who ought to know that the increase will in fact be approximately £3,000,000, of which the major part will be spent on new aircraft. A certain amount of camouflage will be effected in order to show an apparent reduction in certain directions, but the general outlook is highly satisfactory.—C. G. G.]

Sir Sefton Brancker Starts for Home.

Mr. Alan J. Cobham on Feb. 5 flew in his D.H.50 from Calcutta to Akyab and thence to Rangoon. On Feb. 8, with Sir Sefton on board, he started the return flight, and went to Akyab. On Feb. 9 he flew from Akyab to Calcutta.

Brussels-Belgian Congo.

After Feb. 8, M. E. Thieffry, chief of the expedition, and reserve pilot, L. Roger, pilot, and J. de Bruycker, mechanic and wireless operator, were to leave Brussels on a Handley Page W.8F. (one Rolls-Royce Eagle and two Siddeley Pumas) and attempt to fly to Kinshassa, in the Belgian Congo.

The machine, which has been built in Brussels under license by the S.A.B.C.A., was christened at Evere Aerodrome on Feb. 3 by Princess Marie-José in the presence of the Ministers of National Defence and Colonies and other official personages.

The route to be followed will be Brussels—Perpignan—Colomb-Bechar—Ouallen—Gao—Zinder — Fort Lamy — Fort Arachambault—Boughi—Kinshassa, a total distance of 8,300 kms.

On arrival at Kinshassa the machine will be put in service on the Kinshassa-Elizabethville Air Line, operated by the S.A.B.E.N.A.



Major Zanni

on his wonderful flight from Amsterdam to Tokio

The following extract is taken from a letter just received from Major Zanni, the famous Argentine airman, who covered the distance from Amsterdam to Tokio (10,000 miles) in 22 flying days, without having to touch his Napier engine :—

The 450 h.p. Napier aero engine is the most reliable and efficient engine in the World. May we send you particulars?

"MY first engine, the one that brought me along from Amsterdam to Hanoi, was really a fine specimen of trustworthiness and reliability, and when I had to part with it—simply because my other machine sent to me from Japan had already a Napier engine mounted—it felt like parting with one's best friend. Beltrame (my mechanic) was absolutely delighted with it, and was very sorry that it could not accompany us on to Japan as he was sure it would have lasted all the way and more if necessary, because after the accident at Hanoi, with the aid of personnel of the French Aviation Corps stationed there, he dismounted the engine and found that it was in perfect condition still and without any apparent change from the day you delivered it, despite having flown for 105 hours through sand-storms, the most appalling rain imaginable, and most of the time through heat that was too awful for words. The second engine has flown so far for 40 hours and during this time it worked just as magnificently as the first one. I am trusting on this one to take me across the Pacific."

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THE ROYAL AIR FORCE.

The London Gazette.

Feb. 3.

Group Capt. A. L. Godman, C.M.G., D.S.O., is appointed Deputy Director of Manning, Air Ministry (Jan. 26) (vice Group Capt. P. B. Joubert de la Ferté, C.M.G., D.S.O.).

General Duties Branch.—Flt. Lt. S. H. Wallage, M.C., is granted a perm. comn. in the rank stated (Feb. 4); L. A. Walsh is granted a S.S. comn. as a Plt. Off. on probation, with effect from, and with seniority of, Jan. 17; Lt. A. W. Henderson, R.A., is granted a temp. comn. as a Flg. Off. on seconding for four years' duty with the R.A.F. (Jan. 17).

The following Flg. Offs. are granted the honorary rank of Flt. Lt. (Jan. 8):—H. W. A. Fox (Lt., R.N., retd.); R. W. M. Hall (Capt., Indian Army, retd.); E. H. D. Spence (Lt., R.N., retd.); L. P. Winters (Capt., Indian Army, retd.); F. W. Wiseman-Clarke (Lt., R.N., retd.).

The following Plt. Offs. on probation are confirmed in rank:—H. W. P. Stewart (Dec. 18, 1924); C. Clarkson, J. T. C. Skellon, C. V. Williams (Dec. 30, 1924).

Flt. Lt. D. Gilley, D.F.C., is restored to full pay from half-pay (Jan. 16); Sq. Ldr. R. P. Whitehead is placed on the retired list (Jan. 21); Flg. Off. G. F. Embrey Harrison is transferred to the Reserve, Class A (Feb. 4).

The following resign their S.S. comns. (Feb. 4):—Flg. Off. T. B. R. Meadmore (Capt., Indian Army, retd.); Plt. Off. I. B. Gray. The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty (Feb. 4):—L. R. Gladwin-Errington, D. W. J. Meagher.

Stores Branch.—Flg. Off. H. Parker is placed on half-pay, Scale B, from Jan. 31 to Feb. 15, inclusive.

Accountant Branch.—Flg. Off. R. W. Leamon resigns his S.S. comn. (Feb. 4).

Medical Branch.—Flt. Lt. C. McC. Jones, M.A., is transferred to the Reserve, Class D.2 (Feb. 4).

Reserve of Air Force Officers.—H. M. Samuelson is granted a comn. in Class BB, General Duties Branch, as a Plt. Off. on probation (Feb. 3); Flg. Off. J. G. Hay is confirmed in rank (Jan. 29). The following Plt. Offs. are transferred from Class A to Class C (Feb. 3):—V. H. E. Baker, H. D. Clevely.

Appointments.

Week ending Feb. 9.

General Duties Branch.—Group Captain S. A. Hebden, O.B.E., to School of T.T. (Men), Manston, pending taking over command on transfer to Home Estab., 19/1.

Wing Commander D. C. S. Evill, D.S.C., A.F.C., to R.A.F. Depot pending disposal on transfer to Home Estab., 16/1.

Squadron Leaders R. E. Saul, D.F.C., to R.A.F. Depot on transfer to Home Estab., 28/12, and to No. 2 Sqdn., Manston, 2/3. F. E. Sandford, A.F.C., to No. 10 Group H.Q., Lee-on-Solent, on transfer to Home Estab., 17/1. B. P. H. de Roeper, A.F.C., to Aeronautical Committee of Guarantee, Germany, 16/12. T. B. Meyer, to R.A.F. Depot (Non-effective Pool), 16/12.

Flight Lieutenants R. S. Sorley, D.S.C., D.F.C., to Aeroplane and Armament Exper. Estab., Martlesham Heath, 7/2. H. Bligh, to Inland Area Communication Flight, Northolt, 12/2. J. R. I. Scambler, A.F.C., to No. 1 Wing H.Q., S. Farnborough, 31/1. E. J. D. Routh, to School of Army Co-operation, No. 16 Sqdn., Old Sarum, 16/2. E. I. Bussell, to No. 11 Sqdn., Netheravon, 16/2. J. McFarlane, M.C., to Boys' Wing, Cranwell, 16/2. A. C. Sanderson, D.F.C., to No. 5 Sqdn., India, instead of to No. 31 Sqdn. as previously notified, 27/11. T. Henderson, M.C., A.F.C., to No. 5 F.T.S., Sealand, 4/2. R. P. M. Whitham, M.C., to R.A.F. Depot on transfer to Home Estab., 17/1. C. W. Hill, to R.A.F. Depot on transfer to Home Estab., 17/1, and to School of Army Co-operation (No. 16 Sqdn.), Old Sarum, 21/2. H. J. Collins, to Station H.Q., Kenley, 16/2.

Flying Officers C. A. Mason, to Aircraft Depot, India, 25/12. H. S. Hobby, M.C., to Aircraft Depot, India, 9/12 G. S. Taylor, to H.Q., Egypt, 1/1. H. C. Gammon, to No. 4 F.T.S., Egypt, 15/1. R. H. Windsor, to No. 208 Sqdn., Egypt, 15/1. B. H. Shaw, to No. 84 Sqdn., Iraq, 28/12. G. H. Elliott, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 28/12, and to No. 100 Sqdn., Spittlegate, 9/2. E. F. Thorpe, to No. 1 Stores Depot, Kidbrooke, 6/2. M. H. Aten, D.F.C., to R.A.F. Cadet College, Cranwell, 12/2. J. K. Smith, to No. 12 Sqdn., Andover, 16/2. H. E. Rew, to No. 4 F.T.S., Egypt, on appointment to a Temp. Comn. on being seconded from the Army, 27/1. A. M. Vest, to R.A.F. Depot on transfer to Home Estab., 28/12. J. G. Argles, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 28/12. H. Ford, D.F.C., to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 3/1. P. L. Binns, to No. 4 F.T.S. on appointment to a Temp. Comn. on being seconded from the Army, 31/1.

Pilot Officer D. L. Thomson, to No. 60 Sqdn., India, instead of to Aircraft Depot as previously notified, 27/11.

Medical Branch.—Squadron Leader (Dental) D. Blair, to No. 25 Sqdn., Hawkinge, 9/2. Flight Lieutenants E. N. H. Gray, D.P.H., to No. 20 Sqdn., India, 5/1. B. F. Haythornthwaite, M.B., B.A., to No. 28 Sqdn., India, 5/1. W. E. Barnes, to No. 20 Sqdn., India, 2/1. Flying Officers T. Glynn, M.B., to Aircraft Park, India, 2/1. A. A. Townsend, M.B., to Aircraft Depot, India, 2/1. C. G. J. Nicholls, M.B., and B. Pollard, to Research Laboratory and M.O.S. of I., Hampstead, on appointment to S.S. Comns., for short course, 28/1. H. C. C. Patterson, to Marine Aircraft Exper. Estab., Felixstowe, 4/2. F. L. White, to R.A.F. Depot, 4/2.

Stores Branch.—Flight Lieutenant A. T. Cooper, to Stores Depot, Egypt, 15/1. Flying Officers R. W. Stevenson, to Stores Depot, Egypt, 15/1. A. E. F. McCreary, to H.Q., Egypt, 15/1. F. C. C. B. Hichens, to Aircraft Depot, India, 24/1. E. P. Terry, to R.A.F. Base, Leuchars, 1/2. S. D. Dennis, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 28/12.

Accountant Branch.—Flying Officers O. K. Griffin, to Stores Depot, Egypt, 15/1. W. A. Wadley, to No. 1 Sqdn., Iraq, 9/1.

Chaplains' Branch.—The Revd. C. W. Hill, to H.Q., Egypt, 7/1.

R.A.F. Scholarships.

The Air Ministry announces that Wakefield Scholarships, amounting to £75 each, have been awarded to Flt. Cadets John Clarke and R. J. Drummond-Brown, and the Hyde-Thomson Memorial Prize, amounting to about £32, has been won by Flt. Cadet C. W. Cooper.

Flt. Cadet Clarke obtained the first place among the aircraft apprentices recently selected for cadetships on completion of their three years' training at the School of Technical Training, Halton. Flt. Cadet Drummond-Brown obtained the eighth place at the competitive examination held in November last for entry into the R.A.F. Cadet College, Cranwell, and the first place on the list of candidates for the Wakefield Scholarship. Flt. Cadet Cooper was the aircraft apprentice selected for a cadetship who passed out first on completion of his training at the Electrical and Wireless School, Flowerdown.

It will be remembered that the Wakefield Scholarship was instituted in 1920 by Sir Chas. Wakefield, Bart., C.B.E. The Hyde-Thomson Memorial Prize was founded in 1919 by Mr. R. D. Hyde-Thomson for the promotion of proficiency in wireless telegraphy, in memory of his son, the late Lt.-Col. Douglas Hyde-Thomson, R.A.F., who was killed whilst flying on duty.

Rugby Football.

R.A.F. v. Devonport Services.—This match was played at Devonport on Feb. 7 and resulted in a win for the Services by 6 tries to 1 try.

R.A.F. v. Exeter.—At Exeter, on Feb. 9, the R.A.F. beat Exeter by 1 try to nothing. According to the *Daily Telegraph* the R.A.F. showed good form generally but their attacks were spoiled by a lack of finishing power. Shortly before the end of the game the Air Force forwards made a lot of ground by accurate short passing, the attack being rounded off by Plt. Off. Lord Bandon going over for a try.

Hockey.

R.A.F. v. Oxford University.—The match was played under ideal weather conditions and resulted in a win for the University by 7 goals to 2. Oxford opened the scoring within a few minutes of the start, following a mis-hit by Flg. Off. Roupell. The Oxford forward line, combining well, made many dangerous attacks on the goal but were well checked by the steadiness of Flt. Lt. Smith. Later Oxford scored again. Just on half-time L.-AC. Wright made a very fine dribble from the half-way line in the centre, leaving the ball in good position for Sq. Ldr. Vaisey to shoot a fine goal. In the second half Oxford increased their lead to 4 goals to 1, when Sq. Ldr. Keeble had his jaw smashed by a blow from a stick. Though he pluckily resumed play a readjustment of the team was necessary and for the rest of the game Sq. Ldr. Keeble naturally failed to reproduce the form he had hitherto shown. After this accident Oxford put on a further 3 goals and would have scored more but for the stubborn defence of Flt. Lt. Smith. Close on time L.-AC. Wright took the ball up the field from half-way and sent in a very fine reverse centre across the goal-mouth which Plt. Off. Vines drove hard into the goal.

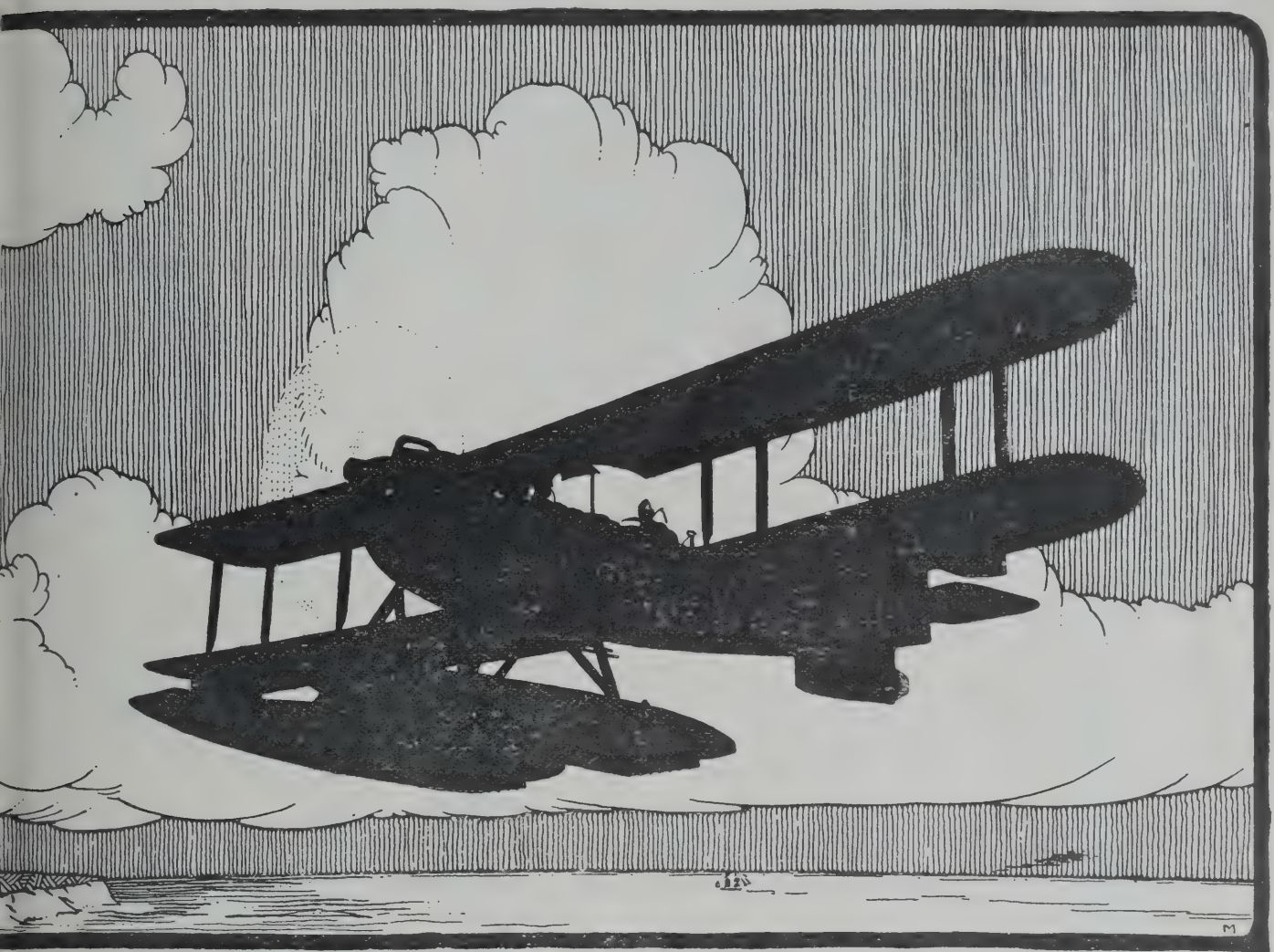
The R.A.F. Club Cricket Week.

As previously notified, the R.A.F. Club Cricket Week will be held this year at Folkestone, where the gate has been guaranteed by the Town. Thus there is good prospect of success and consequent benefit to the R.A.F. Memorial Fund—the more so if the first match, namely, Mr. A. E. R. Gilligan's Australian XI versus the Hon. L. H. Tennyson's South African XI materialises, as it probably will.

But one has received rather a bombshell in the shape of an official announcement, rather curtly-worded, from the late Honorary Organising Secretary of the Week, Capt. M. G. Kiddy, to the effect that the Cricket Committee for 1925 will consist of Air Commodore Halahan (Chairman), General More, Captain Burleigh, and Major Anderson (Secretary), with the assistance of Mr. H. D. G. Leveson-Gower, and a request to deal with Major Anderson for the future. This in answer to one's own inquiries as to the prospects of the Week for 1925.

One has no further information beyond an assurance that there is no dispute of any kind between the Club and the old Committee, the members of which have been thanked individually for their past services. At the same time one cannot help feeling that there must be something wrong somewhere. It seems curious that whereas there were three county cricketers, including two county captains, on the previous Committee, there is no present-day first-class player on the new Committee, nor a single person (with the exception of Mr. Leveson-Gower, who, one gathers, will be running the Scarborough Week at the same time as the R.A.F. Week and will there have his hands pretty full) with experience of how to run a Cricket Festival.

It seems curious also that the unique experiences in organising these Festivals which is possessed by Capt. Kiddy has been omitted altogether. However he himself has nothing to say upon the subject. It would be interesting to know what those in Folkestone who are putting up the guarantee, and those of the Memorial Fund, who hope to reap profits, will say to this change over from a Committee of practical cricketers who have already achieved remarkable success under difficult circumstances to a Committee of excellent gentlemen who are nevertheless novices at this particular job.



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THE STALLED AEROPLANE.

There is a good deal of misconception abroad on the subject of what is known in aeronautical circles as "stalling," and particularly concerning the extent to which it is possible to avoid the dangers commonly associated with a stall by improvement in the design of aeroplanes. Even this paper, which ought to know something about the subject, has on occasion published the suggestion that the unstallable aeroplane, or the aeroplane which cannot dive after a stall, is not only possible, but is an accomplished fact. It is true that a good deal has been done in the past few years towards robbing the stall of the worst of the dangers which usually attend upon it, but stalling still exists—and is still dangerous.

The term stall, as applied to the aeroplane, originated in the very early days of flying, and resulted from the obvious similarity between the uncontrollable descent of an aeroplane which has been asked to climb at too steep an angle, and the behaviour of a cart which is first brought to a standstill and then proceeds to run backwards when it attempts to climb too steep a hill. Despite the general similarity between the two phenomena, the behaviour of the aeroplane is a little less simple than the parallel with the cart would suggest.

What Stalling Is.

It should scarcely be necessary at this period to discuss in any great detail the general properties of an aerofoil over the range of angles of incidence normally employed in flight. It is enough to recall that from the angle of no lift up to an incidence of about 15°, the lift produced at a constant air speed increases steadily with increasing incidence. Consequently an aeroplane wing which has to support a constant weight can do so at a speed which decreases as the incidence increases.

If, however, the incidence is increased beyond this range the lift at a constant air speed decreases, and the aeroplane wing carrying a constant weight therefore has to increase its air speed when this critical angle of maximum lift is exceeded, or else must cease to support the weight and begin to fall under the influence of gravity.

From this it is clear that this critical or stalling angle in an aeroplane corresponds to the minimum possible flying speed, and that to speak of flying at a speed less than the stalling speed involves a contradiction in terms. Flying at an angle greater than that of stalling is possible, but it is flight at a speed above stalling speed.

It is generally known that at stalling angle and above the resistance of an aeroplane wing increases very greatly and that consequently very greatly increased power is necessary for flight at angles beyond the stall. It is also known that certain difficulties with control—particularly aileron control—are encountered. For the first reason horizontal flight in a stalled condition is impracticable, and for the second, descent in a stalled glide frequently leads to a spin. It is not proposed here to discuss the problems of control in a stalled glide. A good deal of progress has been made towards solving them, and for the present it will be assumed that control in the stalled condition can be secured. But it is necessary to consider in some detail what happens in the case of a stalled glide under control.

When "Lift" does not Lift.

The use, in aerodynamics, of the terms "lift" and "drag" or "resistance," to denote forces respectively at right angles to, and in line with, the path of a wing through the air is a very natural and convenient one. But unless it is clearly remembered that it is only in horizontal flight that an aeroplane is supported by "lift" alone, a good deal of confusion will arise. For lift is at right angles to the flight path, but gravity always acts vertically, and therefore only when the path is horizontal can lift exactly balance weight At ordinary flying angles and in normal flight paths lift in the aerodynamic sense may be regarded as a supporting force, without serious error. In a very steep climb, or a very steep descent, it is necessary to realise that lift is not equal to supporting force.

Resistance as a Support.

At 90° incidence the lift of an aerofoil is zero, and its resistance coefficient is very large. Confounding lift with support one would conclude therefore that at 90° incidence infinite speed, and, consequently, infinite power, will be required to maintain support. This is true of horizontal flight—which is impossible at 90° incidence. But an aeroplane can be in equilibrium at 90° incidence. Assuming the necessary control to be available a machine could descend vertically with the chord horizontal. Gravity will be opposed by a vertical force—which, as it is in line with the machine's path must be a pure resistance. The machine is then behaving like a parachute, and given room, will reach a steady speed at which the resistance force is equal and opposite to gravity. It can then descend indefinitely at that speed until it meets the earth.

It can be seen therefore that whenever a machine is descending it is being supported—or at least prevented from falling under the undisturbed action of gravity—partly by "resistance," and not only by "lift," and that the steeper the path of descent the less lift and the more resistance is concerned with support.

Conditions in a Stalled Glide.

As the incidence of the wing increases above the stall—in other words as the path of the aeroplanes more nearly approaches a right angle with the chord—the "resistance" increases, and although "lift" falls off, the total force on the wing really changes relatively little. But the direction of this total force also approaches right angles to the chord as the incidence increases. Consequently, an aeroplane gliding at an angle of incidence above the stall does not lose support with increasing incidence to the degree which would be suggested by "lift" figures. In fact, a stalled aeroplane, if it can be kept in steady motion, will have only a very small range of speed, whether it be at an incidence just above the stall, or parachuting at 90° incidence.

There is one point to be noted here. Up to the stall different forms of wing section may have very different characteristics. Beyond the stall these differences tend to disappear. Of two machines carrying equal wing loadings one with a high-lift wing may have a notably lower landing speed than the other with a high-speed wing. When both are stalled this difference will largely disappear and the speed of equilibrium will tend to become the same in both cases.

Assuming that control beyond the stall is secured, it is necessary to consider what is going to happen to a machine which is stalled too low down to recover normal flight before hitting the earth. How hard is it going to hit the ground and what sort of an undercarriage will it need? Consider a machine with a landing speed of 40 m.p.h. using a normal high-speed type of wing. At any incidence above the stall this machine will have a steady speed of between 40 and 50 m.p.h. Its best angle of stalled glide is not likely to be better than 1 in 3, and between this and a vertical descent at nearly the same speed the pilot has free choice of his angle of descent.

Landing below Stalling Speed.

So far only steady conditions have been considered—that is to say the state of affairs which occurs when the machine has ceased to accelerate under the influence of gravity. Temporarily an aeroplane may reach a speed below the stalling speed—it can even be brought to rest by pulling the stick well back and keeping it there. But when this happens the machine begins to fall and accelerates until either it reaches the equilibrium speed, or it hits the ground. If a machine is brought to a speed below stalling at a foot or two above the earth it has no time to acquire any high speed of descent, and landings which are really below stalling speed can thus be accomplished. But what we have to consider now is not this form of landing, but the possibilities of landing safely from a stall at any considerable height which is yet too low to permit recovery by diving and flattening out.

In the machine considered this means that we have to deal with a machine approaching the ground at 40 m.p.h.—say 60 ft. per second—and at some angle between the vertical and 1 in 3. Taking the latter, the vertical velocity is 20 ft. per second approximately, as compared to zero vertical velocity in a perfect landing and two to three feet per second in case of premature flattening out two to three feet above the ground. Bringing the machine to rest vertically introduces problems which are not merely those of undercarriage and machine strength. The resistance of the crew to acceleration comes into the argument.

What can the Crew Stand?

An unexpected vertical acceleration equal to twice gravity is probably capable of breaking a man's neck if he is sitting with his head forward, or of stunning him by causing his forehead to bang into the back of a chair in front of him. An acceleration of four times gravity, by itself, will cause some people to lose consciousness and is certainly capable of causing fatal injuries in such circumstances as above mentioned. Therefore it would be unwise to attempt to retard the vertical velocity at a rate above twice gravity, or 64 ft. per second per second. In other words not much less than about one-third of a second must be employed in shock-absorbing, so far as the vertical component is concerned. This means at least three feet of travel on the undercarriage for 20 ft. per second vertical velocity. Such an undercarriage travel is not impossible—but it presents difficulties. There is however another matter. During the third of a second in which the vertical velocity is being absorbed, the horizontal component is still in existence. But to provide the vertical retardation the wheels are carrying twice the weight of the machine while that machine is still moving horizontally at nearly 40 m.p.h. Recollecting that in a good landing the wheels carry no load as they touch, and that the total load only reaches the weight of the aeroplane when the machine

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is at rest, it will be obvious to anyone accustomed to the habits of aeroplanes that with normal wheels on a normal aerodrome the machine is fairly certain to stick its wheels in and turn over violently.

The only safe method of landing therefore in these conditions is to provide an undercarriage capable of absorbing the whole velocity of the machine—in this case 60 ft. per second. Still allowing a maximum retardation equal to twice gravity, the undercarriage travel needed is about 28 ft. Cutting the travel down to 14 ft. means a minimum retardation of four times gravity—which would certainly lead to a fairly high casualty rate without bringing the problem into the realm of practicability.

It cannot therefore be held that control beyond the stall will abolish the dangers of accidental stalling. Stalling is safe only when it occurs either at a height permitting recovery by diving and flattening out, or at a height such that the machine has not time to acquire a high vertical velocity.

The Value of Control after the Stall.

Many existing machines are relatively safe to stall at five to ten feet above ground. Control when stalled, by allowing the pilot to keep the nose up and to prevent diving or spinning, may increase the safe height to 20 or 30 ft. The ability to land right side up and to use what shock-absorbing qualities the undercarriage does possess, may often make just the difference between fatal and non-fatal shock to the occupants. Given stalled control the pilot may be able to choose between vertical descent into the top of a wood and collision at 1 in 3 with a house. And if the pilot can prevent spinning he can probably recover in less space than if a spin does develop. Therefore the development of control beyond the stall is eminently desirable. But it would be misleading to suggest that it will by itself make the stalling of modern, heavily-loaded machines at heights of from 50 to 500 ft. above the ground a harmless form of amusement. A machine carrying 10 lbs. per square foot, stalled at 300 ft., is going to hit the ground at 50 to 60 m.p.h., and with a large component of that velocity directed vertically. Undercarriages to deal with such conditions are out of the question, and high-lift wings and the like cease to help once the stall has been well passed. Let us have control beyond the stall to give everybody concerned the best possible chance when the stall does happen—but do not run away with the idea that the stall is only dangerous when uncontrolled.

FLYING BOATS IN THE MEDITERRANEAN.

The paper by Air Commodore C. R. Samson concerning flying-boat operations in the Mediterranean, read before the Royal Aeronautical Society on Feb. 5, describes the work carried out with F.2A flying boats out from the Malta base of the R.A.F. in 1921 and 1922, during the period Air Commodore Samson was in command there. At the beginning of this period the command comprised only two boat first pilots, the boats were in poor condition, had no regular crews, and were only used for local flights. The programme of flights which are the subject of the paper was undertaken for a combination of reasons, amongst them being the training of the command for war, the gaining of experience in seamanship, navigation and reconnaissance, giving the pilots a knowledge of Mediterranean topography and climate, and of the strategic points of the area, and also to study the behaviour of flying boats on detached service. Also the object of impressing on foreign Powers, that the R.A.F. was an active and efficient Service, was kept in view.

In working out the programme three main ideas were followed, (A) that the boats were to be self-contained units, (B) that the crew were to live in the boats, and (C) that once a date had been fixed for the start of a flight the start was to be made regardless of weather.

Three main flights were decided upon, (1) to Feneraki, near Constantinople, to inspect the flight stationed there, (2) to Gibraltar, and (3) to Alexandria. All these flights involved calling at foreign ports, and at the beginning a certain amount of difficulty was found in obtaining permission to visit these. There was a slight opposition to such visits from the home authorities, and apparently some failure on the part of the British Consular authorities to appreciate that when petrol and oil supplies were asked for they were needed for use at once and that some provision for their prompt delivery to the machines was desired.

The boats at Malta were not equipped for work of this nature. They had to be fitted with proper mooring tackle, anchors and engine covers, and for the long flights undertaken, tools, engine spares and signalling gear had to be carried. Owing to the age of the boats, and climatic conditions it was found that they could not take-off with the same load as was regularly carried in this country on the same type during the war, and on many of the flights petrol supplies had to be cut dangerously short. Taken on the whole very bad weather was encountered, and a number of forced landings had to be made in rough seas.

In all twenty-one flights were made covering a total flying time of 238 hours. Seven F.2As were used, also two Fairey float seaplanes. Among the places visited were Corfu, Phaleran, Constantinople, Bizerta, Naples, Tunis, Palermo, Tripoli, Oran, Gibraltar, San Raphael, and Sfax. One F.2A was lost in these flights.

As a result of the experience accumulated in this period very many modifications were made in the equipment of the boats, and Air Commodore Samson suggests a large number of points which should be embodied in the design or equipment of boats which may have to undertake independent cruises of long duration.

Refuelling gave a good deal of trouble. Petrol had practically always to be brought alongside in boats, either in 50-gallon drums, or in 12-gallon tins. The 50-gallon drums were impossible to handle on the F.2As, and the 12-gallon tins were too heavy to be handy. It was found best to decant into four-gallon tins and to fill the tanks from these. A large funnel with a long rubber hose was used and was fitted with slings which were fixed to the upper plane. The hose was long enough to reach any tank without moving the funnel.

Fuel gauges which can be read from the deck are desirable as it wastes time to have to go below to find the state of each tank. Some rapid method of emptying tanks is necessary as circumstances will arise when it is impossible to get off with full tanks.

Better pumping-out arrangements for the bilges are necessary. Wooden hulls will leak, specially in tropical climates. The present semi-rotary pump is tiring to work, the pipe leads to the bilges and the pump get blocked, and it was found that a large garden syringe, helped by a four-gallon petrol tin sawn in half, was the best equipment for clearing bilges. For big boats it is suggested that a pump which can be worked either by hand or by power is necessary.

A lighting installation is essential. Riding lights, internal illumination, inspection and signalling lights are required.

For large boats an auxiliary engine should be provided for electrical supply. This should be able to deal with W.T. when at rest, lighting, pumping, cooking, anchor work, and possibly with slow taxying.

Some method of cooking food is absolutely essential for long-distance work. Electric cooking is the best. On the flights referred to a Primus stove was carried and cooking took place in an empty petrol tin. A cooker will serve to dry clothes, which often get soaked.

Sleeping arrangements for the crew are necessary, and some method of warming sleeping quarters is essential. The F.2As were fitted with folding bunks fixed to the hull side in the tail. These weighed about 12 lbs. and each was fitted with a sleeping bag.

Mooring tackle requires a good deal of attention. Efficient ground tackle is essential. The cable should preferably be wire with the last two fathoms at the anchor end of chain. At least three mooring ropes, hemp for preference, are necessary. A position in the extreme bows where the crew can pick up a buoy is necessary. This should leave the body exposed from the waist upwards, give plenty of room, and afford a solid foothold. There should be an outside walk as well as the cockpit. In the cockpit there must be at least one good bollard with a belaying pin, and one good cleat on each side. A picking-up hook, consisting of a light boat hook, with a spring hook to which is attached a light line, should be carried in the bow cockpit. A fender is essential. All these fittings should have their proper places. Lines should be coiled up on light reels, boathooks carried in clips, etc., and nothing allowed to lie about loose. This means that they have to be incorporated in the design. If they have to be added the machine will become a Christmas tree, and will carry much weight which could have been saved by designing for the equipment.

It should be possible to weigh the boat down at moorings by taking in water ballast, to prevent it flying at moorings in strong winds. If wing-tip floats are used they should be made to take in water ballast, but if possible wing-tip floats should be abolished.

The hull should have a clear passage-way along its whole length. The interior should be light and well ventilated, and the pilot should be able to see the crew if he turns round. The W.T. compartment should be directly behind the pilot, and all the crew should be able to look out. There should also be an external walkway on top of the hull. Every cockpit should have a removable cover. That for the front should be of sliding and waterproof type. The pilot's wind screen should have an electrical wiper.

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The engines should be arranged so that they can be dismantled by the crew without disturbing the wings and should be accessible in flight. A gravity petrol feed is desirable, and the author would like the engines in the hull with gear drives to the airscrews. These latter should be clear of hull spray, and have the maximum possible water clearance.

Cupboards should be provided for all loose gear, such as tools, cooking and eating utensils, spares, clothes, charts, etc.

THE DISCUSSION.

Mr. W. O. Manning said that the designers of flying boats would welcome this paper, which would draw their attention to matters which would scarcely occur to them otherwise. The need for petrol gauges readable on deck was obvious, once they were told of it, but would not have been recognised otherwise. He would like to know what weight of anchor the author considered necessary.

The arrangement of engines in hull with gear drives meant complication and extra weight. If it were used it meant that less load could be carried.

Capt. Nicholson once more reiterated the necessity for getting competent naval architects to design hulls. Seaworthy hulls could be built provided they were designed by those who knew what they were about and did not give their whole attention to air performance. He did not agree that wooden hulls must leak and that they must be inferior to metal ones in this respect. He instanced light hulls on racing boats which did not leak half a gallon a season.

Flt. Lt. Carnegie, having repudiated certain charges concerning his habits in the matter of snoring which are contained in the paper, and having asserted that the author himself was a serious offender in this respect, said that the Mediterranean offered very great scope for commercial flying-boat work. Since his return from the Mediterranean he had further experience with equally old boats of the same type in this country. His particular boat had been built by the Gosport Company. During the herring-hunting cruise from Invergordon, their F. boats were in the water five weeks, yet they took off with 350 gallons of fuel—which they could not have done in the Mediterranean. He thought this must be due to the difference in atmospheric density.

A good many of the modifications asked for in the paper were incorporated in more modern boats, but on the other hand some of these modern boats were quite useless in a sea in which an F. boat could be used.

Mr. Herman Volk, lately manager of the Gosport Aircraft Company, mentioned a flight to the Zuyder Zee in which he had taken part after the war, in a Gosport boat piloted by Lt.-Col. Hope Vere. The boat was a new F.5. They had no trouble with leakage in over a month on the water, but it was true that all their troubles were on the water and not in the air. On a trip from Holland to Felixstowe they spent considerably more time on the water between alighting and tying up than they had spent flying across, and they made their passenger horribly sick in the process.

Wing Cdr. T. R. Cave-Brown-Cave thought an auxiliary engine would have many uses. The author said nothing about starting. In adopting the auxiliary-engine type of starter they had been influenced by the idea that the engine could serve a good many other purposes. He raised the question of the fire danger of petrol tanks inside the hull, particularly if cooking with a Primus stove was to be carried on. He could not remember a case of fire in an F. boat, but it certainly looked as though the danger must exist. A good many people would wonder how these boats got off at all with all the gear they were carrying. There was a Staff College tag to the effect that in military methods the moral was to the material as three to one, and he thought that the taking-off of these machines was to be ascribed to a moral force.

Flt. Lt. B. C. H. Cross said that the flights described in this paper marked the beginning of a new era, that of developing the flying boat to live by itself on the resources it carried with it. They were still carrying on with that development—the herring hunt referred to by Flt. Lt. Carnegie was part of the work. On that occasion they had lived for five weeks on the water and had then flown across Scotland by the Caledonian Canal and back round the west coast.

On that trip they had for the first time on record changed one engine with the boat afloat, using a crane borrowed from the Southern Railway at Folkestone. In some ways unfortunately they were getting no further. There was still no satisfactory method of bilging, and the anchor question was unsolved. And they still had to use machines almost as antique as those used at Malta.

Col. Tizard said that unfortunately it seemed that opportunities for carrying on pioneer work such as the lecturer described, were getting fewer as time went on. He hoped that finance in the near future would allow for more of this type of practical experiment on a large scale. The list of practical requirements given by the author were such as were apt to daunt the designer, but if they were necessary it was no use producing machines without them.

Air Commodore Samson, in reply, said that a couple of 50-lb. anchors was about the limit that could be carried. He could not agree that gearing must be complicated, and the advantages of having the engine under cover would outweigh the disadvantages. If tanks were placed in the wings, obviously a pump was the way to fill them, but he would prefer to have them in the hull. There should be a filling tank on deck with leads to the internal tanks, and the main tank gauges should be visible to the pilot. All the wooden hulls he had met leaked, but he had to use the ones he was given. He agreed as to the commercial possibility of flying boats in the Mediterranean. Why not fly from Marseilles to Alexandria instead of going by steamer? It could have been done to-day if we had carried on the development of flying boats instead of dropping them after the Felixstowe Fury.

The extra weight of an auxiliary engine would be well worth taking. They had no trouble with starting, and on cold mornings a little exercise on the starting handle was a good thing. As to the fire danger with tanks in the hull and with cooking going on, they had not had any trouble. They put their Primus in half a petrol tin and pushed it out on the tail, but they succeeded in getting excellent meals. It might be safer to put the fuel in the wings, but he doubted if it was worth it. You did not want the weight high up in the water. It seemed a pity to waste flying boats on herring hunting, they should have been sent to Gibraltar.

His requirements as to equipment might sound excessive if regarded from the flying point of view, but the flying boat would not fly more than once or twice unless its life on the water were considered as carefully as its air behaviour.



The Blackburne School Seaplane—essentially a Swift torpedo-carrier on floats—which is used for seaplane training at the R.A.F. Reserve School at Brough.

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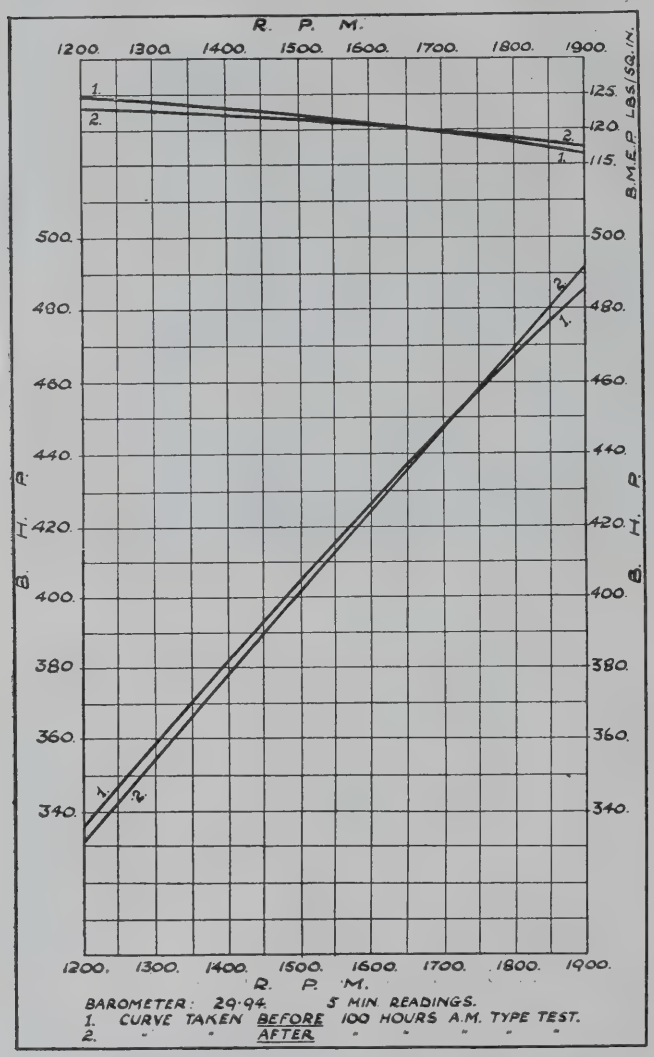
Telegrams: *Aircraft 141, Yeovil.*

Another Jupiter Type Test.

During January a Bristol Jupiter engine, No. JX 1000, was submitted to the new Air Ministry 100-hour type test, at a rated output of 425 h.p. at 1,650 r.p.m. Before the test in question this engine had already run for 77 hours. The complete tests consisted of 1½ hours on the brake for the taking of a power curve, 40 hours at 383 b.h.p. on the brake, 50 hours at 383 b.h.p. in the shed on an airscrew, one hour at 429 h.p. at 1,650 r.p.m., one hour at 304 b.h.p. 1,920 r.p.m., one hour at 466 b.h.p., 1,825 r.p.m., and a final 1½ hours for the taking of a second power curve; the last four runs being on the brake.

The second power curve—as shown in the diagram reproduced—was slightly better than the original. The total consumption during 100 hours' running was 2,627 gallons of petrol and 1,259 pints of oil, giving an average of .578 pints of fuel and .033 pints of oil per b.h.p. hour.

On stripping the engine at the conclusion of the test it was found to be in excellent condition in every way.



Italian Civil Aviation.

It is reported that extensive plans have been formulated for the establishment of Civil Aviation in Italy. Three air lines are to be operated which will interconnect Barcelona via the Italian Peninsula with Constantinople.

The first line to be opened will be the Brindisi-Athens-Constantinople line of a total length of 930 miles. It will probably start operations in July.

The second line will be Genoa-Barcelona, a distance of 403 miles. And the third and inter-connecting line will be Genoa-Rome-Naples-Brindisi a distance of 680 miles.

Arrangements for the first two lines are in active preparation, and tenders for the operation of the last are being invited. All three lines, which will be run by Italian companies, using Italian equipment and subsidised by the Italian Government, will be operated by seaplanes and it is hoped that they will be in operation by next summer.

Other lines under consideration are Turin-Trieste and Milan-Lausanne.

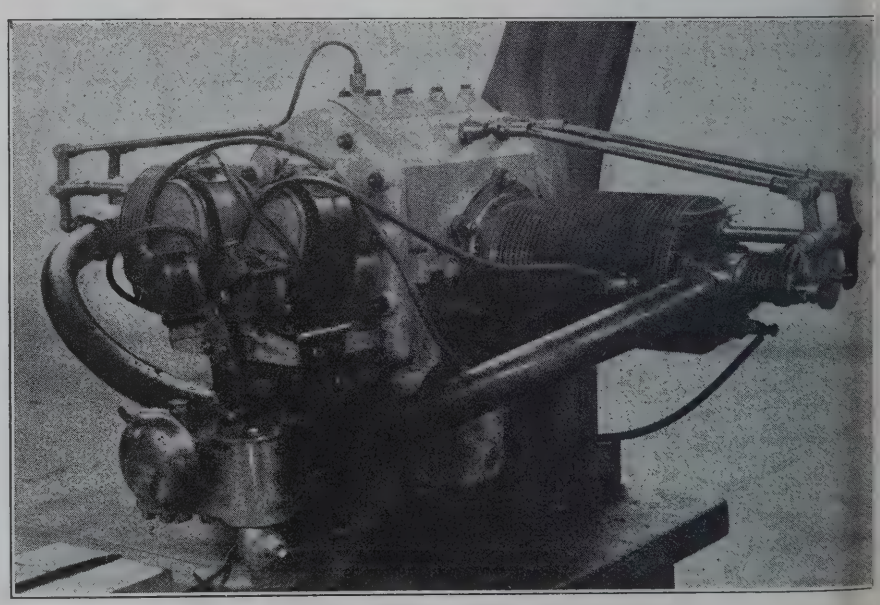
Aerolite Pistons.

The Light Production Co., Ltd., of 60/66, Rochester Row, Westminster, announce that on the voluntary liquidation of the Aerolite Piston Co. they have acquired the goodwill of the late firm, together with the patterns, dies, jigs and tools, and that they can give prompt delivery of the Aerolite specialities, in many cases from stock. As the Light Production Co. have already a large experience of the production of aluminium pistons, having for a long time past supplied these to many of the best-known car and engine-builders, customers can rely upon the maintenance of a very high standard of workmanship in all future deliveries of Aerolite pistons.

The Light Production Co. can now supply Aerolite pistons, complete with gudgeon pins and Cygnet piston rings, all produced under the same roof and assembled by skilled mechanics under a single control, which should tend to the production of a complete piston unit of the highest possible quality.

Aircraft Finishes.

Naylor Bros. (London), Ltd., of Slough, Bucks. the well-known manufacturers of varnishes, paints, enamels and distempers, have just brought out a small booklet in which are set out a list of the various finishes they have produced for aircraft purposes. As manufacturers of superfine varnishes, etc., for 125 years, their accumulated knowledge and experience, together with the advantages of a thoroughly modern factory, complete with a fully-equipped laboratory, has resulted in a very complete range of aircraft finishes being produced. All these finishes are fully approved by the A.I.D. and in addition Naylor Bros. hold an Air Ministry appointment as official A.I.D. examiners, thereby being empowered to release material and issue the requisite certificates, thus enabling them to give immediate despatch from their works. To enumerate the complete list of their Aero Specialities would involve a considerable amount of space, be of little interest to those not requiring such commodities, and perhaps defeat the object of the publication of this special booklet. However, to all those firms who are likely to require any form of aircraft finish, Naylor Bros. will be pleased to send a copy of this list together with any further information on a subject of which they have made such a complete study.

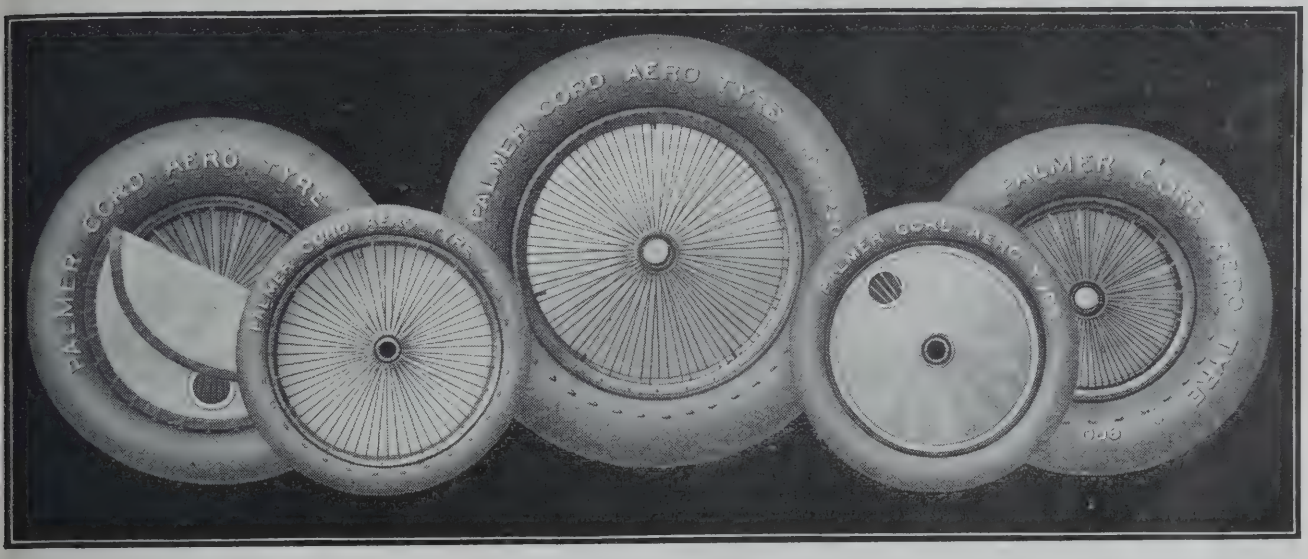


THE 26 h.p. PIAGGIO-PEGNA LIGHT AEROPLANE ENGINE.—The engine here shown was designed by Ing. Pegna for a light aeroplane which when completed was found to be too heavy for the engine.

The engine however has performed satisfactorily, giving the rated h.p. at 1,650 r.p.m. for a weight, including airscrew, of 55 kg. (122 lbs.) The cylinder capacity is 1,650 c.c. and the cylinders are actually concocted from those of the 110 h.p. Le Rhône engine.

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375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132 46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132 46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×230	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
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SINK (240)

Hawker Activities.

The Hawker Engineering Co., Ltd., which has its works at Kingston-on-Thames was founded after the liquidation of the famous Sopwith Co. for the manufacture of motor-cycles and aircraft. It was formed by the late Mr. H. G. Hawker, Mr. T. O. M. Sopwith, Mr. "Bill" Eyre, and Mr. F. Sigrist and various other people who were concerned with the old Sopwith firm. Mr. Sopwith and Mr. Sigrist are now the joint managing directors.

For the first year or so the firm built motor-cycles of very successful quality and in fairly large quantities, but this was merely to give employment to a number of one-time Sopwith workers. As soon as it was seen that there was any chance of aircraft orders coming along the whole of the personnel was at once put again on aircraft work and now the Hawker Engineering Co. occupies the whole of the old Sopwith factory. A recent inspection of their works showed that all available room was taken up with the production and reconditioning of aeroplanes.

For some time nothing but reconditioning of D.H.9as and Snipe was done, but meanwhile the firm were working on an experimental two-seater Corps Reconnaissance monoplane of the thick-wing rigidly-braced type with a Bristol Jupiter engine. The machine was completed in 1923 and flew well, piloted both by Mr. Raynham and Mr. Courtney.

Many valuable data were got from this machine with regard to the effects of thick wings and it proved a very valuable experiment.

Shortly afterwards a single-seater biplane, driven by a Jupiter engine, and named the Woodcock, was also produced and appeared in public for the first time at the R.A.F. Pageant last year. Here it put up a singularly fine performance which, even among so many other excellent machines, was notable, and all the pilots who have flown it speak in very enthusiastic terms of its flying qualities. The single-seater pilot who loves stunting for stunting's sake is likely to transfer his affections to the Woodcock when once it reaches the Service stage.

It has now passed through Martlesham but unfortunately the performance figures are not at present available. As it has been put into production it is likely that an Air Force Squadron will be completely equipped with Woodcocks this year.

For the 1923 Aerial Derby the firm brought out the old Sopwith Racer for sporting purposes and to get experimental data for speed machines. The machine finished second in this race and was to be equipped with floats for the Schneider Cup of that year. Unfortunately it suffered from a forced landing and hit the stump of a tree and was damaged. The data obtained from this machine however are likely to be of very great value, for according to the current issue of "All the World's Aircraft" (published last summer) the firm is now engaged on the construction of a single-seat fighter with a Rolls-Royce Condor engine.

Two light aeroplanes were built for the Lympne Competitions last year, one of which was flown by Mr. Raynham and the other by Sq. Ldr. Longton. Mr. Raynham's machine came within an ace of winning the whole competition hands down, but that has now passed into history. Had it been equipped with the more reliable Bristol Cherub engine it is probable that it would have won. These two machines have for some time been under test at Martlesham where their performance has been extremely good. They have also been used as the ground work for experiments on a bigger scale. At the present moment there are several experimental machines under construction or in the drawing office or at experimental stations which the Secret List forbids one to discuss.

All the work of the Hawker Co. is of the very highest possible standard and the drawing office, which is under the guidance of Mr. Carter, is exceedingly interesting to visit.

All sorts of labour-saving devices which allow a big speed-up in production are in use at the Hawker works. Such things as enamelling, painting and cleaning of exhaust pipes by hand are now things of the past. Similarly instead of painting or enamelling by the old-fashioned method this is now done by spraying.

In fact it may safely be said that the Hawker Co. has now built itself up so that at a moment's notice it could turn out machines in the event of an emergency on a large production basis.—G. D.

Paris-Dakar.

On Feb. 3 Capt. Lemaitre and Lieut. Arrachard left Etampes Aerodrome at 11.39 hours on a Bréguet XIX biplane (480 h.p. Renault engine), in an attempt to fly to Dakar non-stop, a total distance of approximately 2,800 miles.

At 01.30 hours on Feb. 4 they passed over Casablanca, 1,200 miles from Paris and nearly half the total distance to Dakar. Finally they were forced to land at Villa Cisneros (capital of the Spanish Colony of Rio de Oro), 465 miles from their objective. The total length of the flight was 2,400 miles, covered in 25 flying hours. As it had been estimated that the whole flight would have been accomplished in 25-26 hours it is presumed that they met adverse winds which held them up and caused them to run out of petrol.

On Feb. 5 they left the spot where they had forced-landed at 12.00 hours and arrived at Dakar at 18.00 hours.

On Feb. 7 they left Dakar at 08.00 hours for Bamako and Timbuctu. The distance from Dakar to Bamako is 625 miles and from Bamako to Timbuctu, 560 miles.

They were forced down at Kayes, on the Senegal River, about 440 miles from Dakar, at 14.00 hours, and the crew have telegraphed to Dakar for a mechanic and a new engine, so it is presumed that they have experienced serious engine trouble.

Both pilots have been promoted to the substantive rank of Captain. Capt. Lemaitre, who was a Captain in the Reserve, has been absorbed into the Regular Force.

Paris—Lake Chad.

The de Goys expedition, consisting of two Blériot 115 biplanes (four 180 h.p. Hispano-Suiza engines each), piloted by Lieut.-Col. Vuillemin and Capt. Pelletier Doisy, which is attempting to fly from Paris to Lake Chad and back, left Adrar at 06.45 hours on Feb. 3 for Ouallen, a distance of 300 miles, where they arrived three hours later.

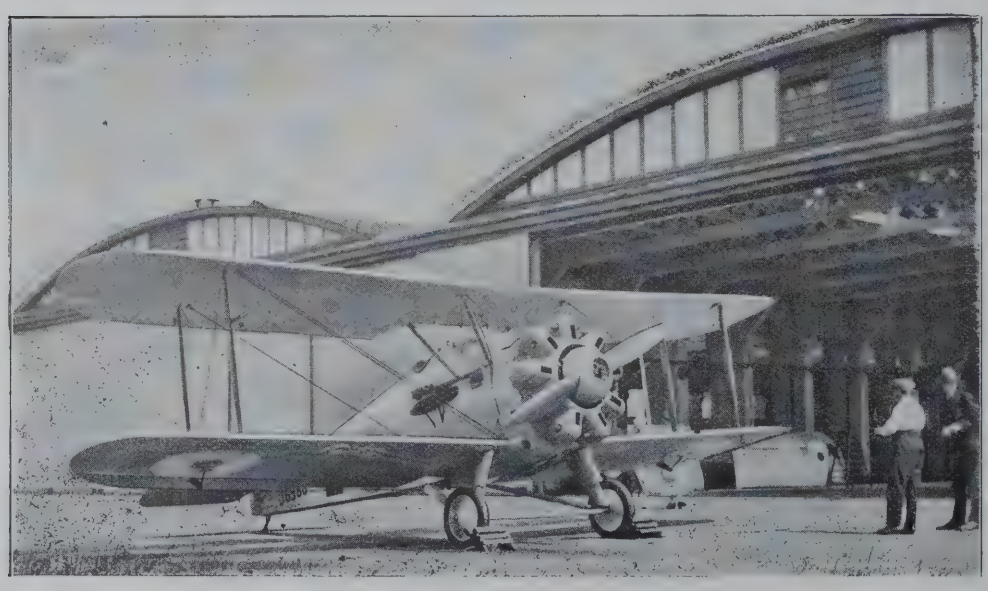
On Feb. 4 they left at 07.00 hours for Tessalit, a distance of 300 miles, arriving there at 10.45 hours.

On Feb. 5 they left Tessalit at 06.50 hours and covered another 300 miles in 3 hours 25 minutes, reaching Gao, at the top of the big southward bend of the Niger River, at 10.15 hours. Here one and a-half days' rest was occupied in overhauling their equipment. On Feb. 7 they left Gao at 06.15 hours and arrived at Niamey, 250 miles from Gao, at 09.40 hours. Certain minor repairs are to be made before leaving for Zinder.

Up to Niamey the expedition has covered 2,920 miles, of which 1,680 have been over the desert.

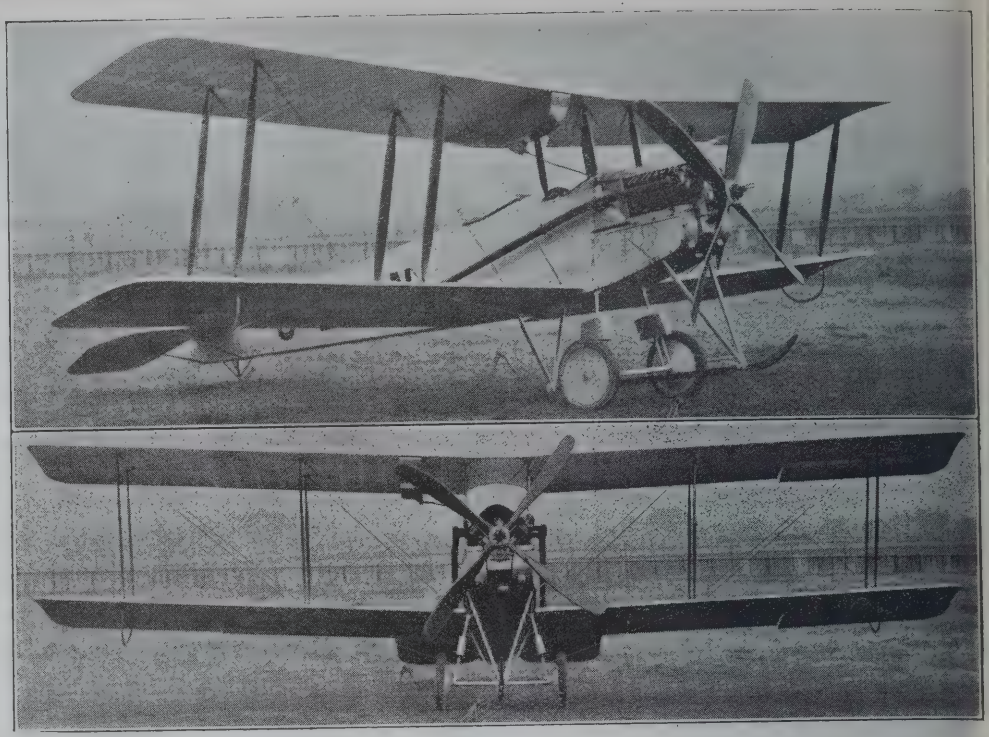
The remaining stages of the expedition are Zinder—Fort Lamy—Bangui—Lake Chad.

After a few days' rest the return to Paris will begin and it is expected that the expedition will arrive in Paris during the last few days of February or the first few days of March.



THE LATEST FIGHTER.—A photograph taken at Brooklands showing the Hawker Woodcock with Bristol Jupiter engine in its latest form. It has now passed into the production state and so a Woodcock squadron of the R.A.F. may be expected in the not too distant future.


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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 10; Tuesday, 8; Wednesday, 10; Thursday, 10; Friday, 10; Saturday, 10; Sunday, 1.

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AIR UNION:
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K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 17.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 33, carrying 40 passengers. Foreign machines: 26, carrying 40 passengers.

Comparative Figures:

For week ending Feb. 8:
Machines, 59; Passengers, 86; Crews, 73; Total personnel, 159.

Corresponding week, 1924:
Machines, 69; Passengers, 103; Crews, 107; Total personnel, 210.

Corresponding week, 1923:
Machines, 50; Passengers, 144; Crews, 87; Total personnel, 231.

Corresponding week, 1922:
Machines, 54; Passengers, 92; Crews, 87; Total personnel, 179.

Corresponding week, 1921:
Machines, 22; Passengers, 25; Crews, 27; Total personnel 52.

Croydon Notes.

There was no blank day last week at all, and on all days except Sunday practically all the scheduled trips were completed. On Sunday only one machine completed a trip, namely, a Handley Page W.8b piloted by Mr. Dismore, carrying seven passengers from London to Paris.

The Napier-engined Vickers Vulcan is now on the regular service. It gets off with eight passengers like a scout and is quite fast in the air. It seems a great pity that all the Vulcans were not equipped with Napiers two years ago. Moreover the landing speed of this type is remarkably low and it is said to be easy to fly.

The old and ancient 0/400 Handley Page, which a year ago was tethered out in the open to die, seems to be weathering all the gales and other vagaries of our climate with great fortitude. It is now rumoured at the aerodrome that she is soon to have her piers grouted and that she will then be put on the service again. Doubtless there will be all sorts of controversies among various bands of technical experts, some of whom would prophesy her instant collapse, while others would declare that she was as strong as ever. Perhaps in a few years' time THE AEROPLANE will be called upon to open a subscription list to pay for restoration after Mr. Grace has certified her as a dangerous structure.

At the Aircraft Disposal Company, Mr. Perry has been flying the Avro-Airdisco during the week. On Saturday the D.H.51-Airdisco was at the aerodrome. Mr. Hubert Broad, who was flying her, was just taking off with an astonishingly steep climb when at a height of between 500 and 1,000 ft. something was seen to fall from the machine. When the object hit the ground the machine came down too, and landed beside it, and Mr. Broad got out and retrieved his hat which had blown off. After which digression he returned to Stag Lane.

Mr. Budd, who, under Mr. Shaw, rules over the destinies of Shell Spirit at the aerodrome, and Mr. Hewlett, who directs the supply of Pratts there, are always to be seen in evidence, but, at any rate during one's visits to Croydon, one never seems to see any of the B.P. people there. Mr. Rodgers used to be very much to the fore at one time, but now the B.P. office seems always to be fast and locked.

Mr. Leverton has had a bad attack of the all-prevalent "flu" lately, but now he is happily recovered and is about again sending his Fokkers off and meeting them as they come in with the regularity of clockwork.

The Hall and Brenard wireless syndicate is going very strong indeed. One has recently had an opportunity of inspecting its products and one can safely say that the workmanship is far and away superior to that shown in the majority of wireless accessories now on the market. They employ about 100 people.—G. D.

The Avro Airdisco.

The 120 h.p. Airdisco engine produced by the Aircraft Disposal Company Ltd., and recently described in THE AEROPLANE, has been installed in an Avro. The result is that time taken to climb to 10,000 ft. has been halved and the general performance has been vastly improved.

Mr. Perry recently made a demonstration with this machine at Croydon. It got off the ground in a remarkably short run and proceeded to climb as though it were a Bristol Fighter. Moreover this climb was maintained and did not seem to diminish higher up in any way at all.

Mr. Perry then carried out all the well-known evolutions, such as rolls, loops, spins, etc., and seemed to make a very much easier job of it than with the rotary-engined machine. After turning the machine into every conceivable attitude he

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made a very pretty side-slip landing and the machine pulled up in a remarkably small space.

The original Airdisco engine has now been installed in the D.H.51 and a second similarly-engined 51 is being built for Air Commodore J. G. Weir.

Both the Airdisco-D.H.51 and the Airdisco-Avro would make ideal training machines for the R.A.F. They are cheaper to run and the stationary engine inspires much more confidence in pupils than does the "Catherine-wheel" type.

Cerric for Car Bodies.

Immediately after the War when the production of aircraft practically ceased in this country for some time Mr. Wallace Barr, of the Cellon Dope Co., sought about for some outlet in civil life in which his aeroplane dope or a variant of it could be put to some civil use. Various uses such as for spraying bath taps, golf balls, hockey balls, etc., have been mentioned in the columns of The Aeroplane from time to time but the latest development is the use of Cerric for motor-car bodies.

The conditions under which motor-cars are used to-day are such that it is difficult to retain the original polish for any length of time, and in spite of all possible care the body-work gets scratched and marked and continual polishing does more harm than good. Moreover it was necessary for a considerable period to elapse for the paint-work of a car body to dry.

The use of Cerric Motor-Car finish gets over both these difficulties. This is not a paint in the ordinary sense of the term. It is a cellulose compound which is applied by means of spraying and it adheres to the surface to which it is applied so firmly that it practically forms an alloy with it. The colours in which it can be obtained are many and varied and it is a fact that the more it is polished the better it looks. It is very much more durable than ordinary varnish and it is not so susceptible to scratches and it takes but a few hours to dry.

Mr. Wallace Barr has had his own car treated in this way and certainly one has never seen the body-work of any car better finished. For production work Cerric should entirely revolutionise body-work. It seems that it is only a matter of time before it will be used by all coach builders.

Incidentally, Cerric finish is being used to treat the steel frame-work of the all-steel houses which are being erected by the firm of W. and J. G. Weir, Ltd.

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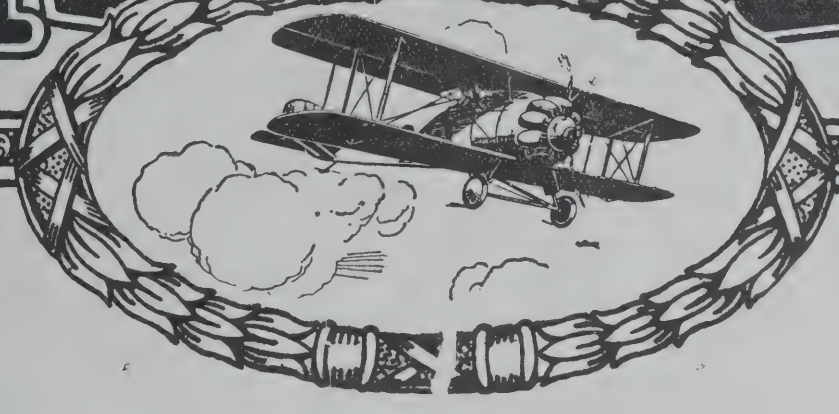
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PERSONAL NOTICES.

Death.

HALL.—On Dec. 15, of fever, in the Amazon Valley, Ernest George Fenton Hall, aged 25, late R.G.A. and R.A.F., and Officers' Heavy-weight Boxing Champion, Royal Air Force, 1922, the younger son of E. F. Hall, J.P., and of Grace Hall, formerly of Westport Lodge, Westport, Ireland.

Marriages.

LANGDON—PLATT.—On Jan. 23, W. F. Langdon, R.A.F., to Eneid M. E. Platt, daughter of Mr. and Mrs. E. Platt, of Gorddinog, Llanfairfechan.

MANSELL—PUGH.—On Feb. 7, at the Parish Church, Westbury-on-Trym, Reginald Baynes Mansell, R.A.F., to Mabel Lucy Pugh.

Forthcoming Marriages.

AIREY—SPEARING.—The engagement is announced between James L. Airey, R.A.F., eldest son of Mr. and Mrs. Airey, of Lancelyn, Kew Road, Kew, and Kathleen Elizabeth Spearing, eldest daughter of Mr. and Mrs. W. E. Spearing, of the Tapestries, Riverside, Twickenham, and granddaughter of the late Dr. Andrew Spearing, of Eccles.

AITKEN—TWEEDIE.—A marriage has been arranged, and will take place in Malta in April, between Flt. Lt. R. Stanley Aitken, M.C., A.F.C., R.A.F., only son of Mr. and Mrs. Robert Aitken, lately of Stanmore, Middlesex, and Ena, only daughter of the Rev. D. Jackson Tweedie and Mrs. Tweedie, The Manse, Stitchel, Roxburghshire.

Births.

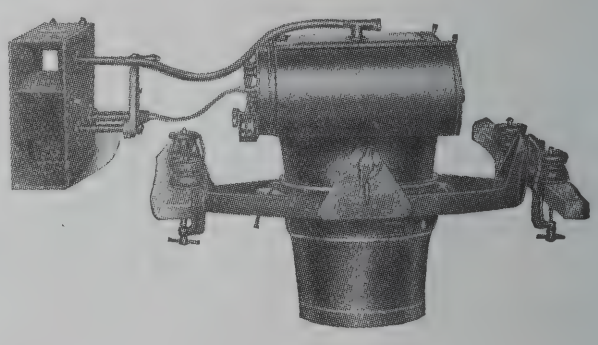
BLOUNT.—On Feb. 6, at Baveno, Farnborough, to Joan, wife of Sq. Ldr. C. H. B. Blount—a son.

DE ROEMER.—On Feb. 3, at Boundary Road, St. John's Wood, the wife of Major Charles de Roemer, late R.A.F.—a son.

WARD.—On Jan. 22, at Camborne, to Dulcie, wife of Flt. Lt. A. A. Ward, R.A.F.—a daughter.

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Edited by C. Grey

Vol. XXVIII. No. 7. SIXPENCE WEEKLY. Registered at the G.P.O. as a Newspaper.

"SWIFT CAME THE TRIBE TO BEHOLD THEM."



STILL GOING STRONG.—The D.H.50 (Siddeley Puma) in which Sir Sefton Brancker piloted by Mr. Alan J. Cobham is now on the way home from Rangoon at Jodhpur, Central India, on the outward journey. The photograph was taken by Mr. A. B. Elliot of the De Havilland Aircraft Co., who is the engineer accompanying the expedition

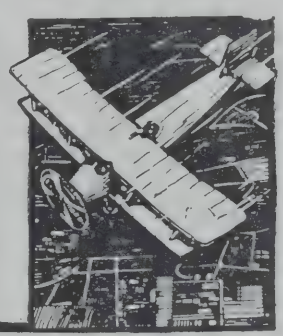


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ON THE CROYDON ACCIDENT.

On February the 9th Sir Arthur Colefax, K.C., appointed by the Secretary of State for Air as President of the Court of Inquiry to investigate the fatal accident which occurred on Dec. 24, 1924, near the Croydon Aerodrome to the D.H.34 G-EBBX piloted by Capt. Stewart, issued his report. Professor B. Melvill Jones, A.F.C., Mond Professor of Aeronautics at Cambridge University, and Mr. J. Swinburne, M.Inst.C.E., F.R.S., who were appointed to act as assessors, also signed the report.

The Court deserves to be congratulated on the clearness and conciseness of its report. In spite of this conciseness it is too long to be published in full in THE AEROPLANE but the main conclusions at which the Court arrived must be published. These conclusions are as follows :—

(1) No official of the Air Ministry, or of Imperial Airways, Limited, was in any way negligent in the discharge of his duties in relation to the aircraft G-EBBX.

(2) Captain Stewart was a skilful and experienced pilot, and no blame is attributable to him.

(3) The dive to earth was due to loss of control combined with a stall, which occurred whilst the pilot was endeavouring to make a forced landing in circumstances of great difficulty.

(4) The flight of the aircraft for about half the time it was in the air was normal. Thereafter some defect developed, but whether in the engine, or its installation, or otherwise in the aircraft, there is nothing to show.

(5) The aerodrome at Croydon is unsatisfactory. This was not the primary cause of the accident, and I do not say more than that it may have been a contributory cause.

(6) The total weight of the aircraft on its last flight was less by about 40 lbs. than the maximum authorised.

(7) The Air Ministry should consider the question whether any and what limit should be fixed for the angle of climb, as also for the stalling speed, of aircraft carrying passengers.

(8) Every endeavour should be made to free aircraft carrying passengers from the danger of loss of control associated with stalling.

THE REASON FOR THE ACCIDENT.

Throughout the reports of the inquest on those who were killed in the accident and throughout the published reports of the evidence before the Court of Inquiry there has been no indication whatever as to what is in fact the basic reason for the deaths caused by the accident. It is therefore the more satisfactory to see that the Court of Inquiry itself draws attention to that basic reason in the very last words of its report. Paragraphs (7) and (8) point directly to the solution of the whole problem of preventing fatal accidents in aircraft.

For a very long time, in fact almost ever since the Armistice in 1918, THE AEROPLANE has been preaching that fatal accidents caused by aeroplanes losing their flying speeds, stalling in the air, and diving to earth can be avoided. And it has also argued continuously in favour of aeroplanes which can get off the ground with a short run and can land at a low speed.

Therefore one can only hope that at long last, now that a Government Court of Inquiry has delivered an official verdict on this subject, the Department of Civil Aviation and all those who are concerned with the design and construction of aircraft either for Service or civilian purposes will be induced to take heed of the lessons which some few people have been trying to drum into their heads for so long.

Very shortly after the accident occurred one wrote an article on it which was actually put into type on Dec. 29, 1924. The article was not published because on consideration one concluded that it would be better to keep it until after the Coroner's Jury and the Court of Inquiry had delivered their verdicts. But a printed copy of this article was sent to the Croydon Coroner on Jan. 8, 1925, in the hopes that the points raised in the article might suggest questions to be asked of the witnesses at the inquest.

No such questions were asked. The whole inquest resolved itself into an unseemly wrangle between Counsel and witnesses representing various interests. And the evidence, such as it was, involved all kinds of side issues, personal vendettas and so forth which had nothing to do with the true cause of the accident.

It is therefore the more satisfactory to see that the practical men who composed the Court of Inquiry should have, without troubling about evidence, indicated as the underlying reason for the accident precisely those points to which this six-weeks-old article drew attention. The article reads thus :—

ANOTHER LESSON.

The lamentable accident on Christmas Eve to the D.H.34 G-EBBX piloted by Mr. Stewart ought in any well-organised community to mark the end of the present system of using in commercial aviation aeroplanes which, though perfectly built and in their day thoroughly well designed, are in the light of our present knowledge not merely obsolete but provedly dangerous.

It is true that the D.H.34 has been designed since the end of the War in 1918. But it was designed almost entirely in the light of war knowledge. All that has been discovered since then about the peculiar aerodynamic attributes of thick wings and about the use of wings with flaps along the trailing edges and all that ought to have been discovered by now about the use of slotted wings, if the experiments have been properly pushed forward by the technical departments of the Air Ministry, is knowledge which was unavailable, or at any rate was only available to a very few individuals, when the D.H.34 was designed. Therefore one cannot blame the technical people of the de Havilland Company for using the particular wing design which they did on the D.H.34.

But it is very difficult to find an epithet which is suitable to apply to a firm holding a monopoly of Government money and with all the Air Ministry's information (which is not the same as the Air Ministry's knowledge) at its disposal which continues to use wings of this type for at least two years after they have been condemned as dangerous by practice and theory alike.

The point is that the type of wings used throughout the War on every aeroplane (with perhaps the exception of certain types of Fokker fighting machines) has the peculiarity that when the tail of the machine is pulled down and the nose of the machine is pulled up to a certain point the wing loses its lift, the machine drops its nose suddenly and dives until it has acquired sufficient speed to give the pilot control over it again. The length of the dive varies with the particular type of wing, and the design and weight and speed of the aeroplane. But in almost any type it may be reckoned that if a machine is stalled and nose-dives from anything below 1,000 feet the machine will hit the ground before the pilot can regain control.

The special quality of the types of machines which can now be built with certain kinds of thick wings, and with wings fitted with flaps and, one believes, with slotted wings, is that in the event of the nose of the machine being pulled up until the machine stalls, the machine will simply sink and begin to glide forward but will not under any circumstances throw its nose down and dive.

For several years, in season and out of season, one has driven this lesson home to all those who are concerned with the design and construction and use of aeroplanes. Yet nothing has been done by any users of commercial aeroplanes (with the notable exception of the de Havilland Company itself, which has turned out a flap-winged air-taxi) to fit our commercial aircraft with wings which will prevent nose-diving.

Quite early this year those who are responsible for the equipment of the United States Trans-Continental Air Mail Service began experimenting with various forms of wings which would prevent nose-diving and would permit slow landing. One was told while in the States that this action

was taken very largely as the result of what has been read in The Aeroplane newspaper.

The type of machine used by the U.S. Air Mail is the American-built D.H.4 designed during the War with wings of the type which do cause nose-diving. The experiments with new wings have proved to be very satisfactory and in due course all the U.S. Air Mail machines will be fitted with wings of modern type. Yet, in spite of the fact that the Americans took their cue from us, our Government-subsidised air line is still using wings of a type which is known to be dangerous.

The Royal Air Force itself has already in service at least four types of War machines with non-diving, slow-landing wings. Two of these are single-seat fighters, one is a two-seat bomber and one is a general service seaplane. All have proved their efficacy in the particular directions most required. That is to say they get off at slow speeds with heavy loads, they land slowly under perfect control and they cannot nose-dive. The seaplanes in particular were actually in use during the War. Therefore the efficacy of the flap wing has been known for over six years.

In spite of this the machines used by Imperial Airways are not fitted with modern wings. It is known that one of the new types of machines on order for the Air Ministry, the D.H.54, which is a 14-seater with a 600 h.p. engine, is fitted with wing flaps, but that is as far as the directors of the firm have gone in the way of assuring safety.

The accident at Ivinghoe, in which five people were killed, was caused by the pilot pulling up the nose of his machine too much in landing. The accident at Croydon was caused by pulling up too much when trying to turn or when climbing. But in either case the effect is the same—a stall, a nose-dive, and so many deaths.

There is no excuse in these days for the occurrence of such accidents. Let the directors of Imperial Airways see to it that such an accident never happens again to any machine in their service.—C. G. G.

* * *

The Wrong Idea.

The truth of the matter is that those who are responsible for Civil Aviation in this country, from the Director of Civil Aviation and the Directors of Imperial Airways downwards, have all got into their heads an entirely wrong idea of how to run air lines. The only controller of an air line whom one has ever met who has the root of the matter in him is Colonel Paul Henderson, Assistant Postmaster-General of the United States, who is responsible for the success of the trans-Continental air mail between New York and San Francisco. That is the only really successful air line in the World and it is successful because Paul Henderson has adopted as his motto the words, "The success of an air line lies on the ground."

In a short time one hopes to describe in some detail the ground organisation of the U.S. Air Mail. At the moment there is only room in which to point out the fundamental reason for the lack of success of our own air lines.

That reason is the fixed belief of those who are responsible for the running of our air lines that safety can be secured by producing infallible engines, or at any rate by the use of a multiplicity of engines, so that in the event of the failure of one engine the aeroplane may be able to reach a safe landing place with the power still available from its other engines. Every other device which tends towards "Safety First" seems to be subordinated to this one idea.

The Right Idea.

The proper way to organise an air line is to start with the firm belief that every engine on every aeroplane is going to stop at any moment, from the moment when the machine leaves the ground till it alights at its destination. On no other assumption can the safety of passengers be guaranteed, for as soon as one begins to assume that engines will not stop one begins to gamble on the engines.

It is of course quite right and proper to do all that can be done to produce infallible engines and to design power plants so that if one engine stops the aeroplane can still proceed. But it is essential to remember that any engine or all the engines may stop at any moment and that if they do so the pilot must have every possible opportunity of putting the machine onto the ground or into the water without killing himself and his passengers.

The mere idea of the infallible power plant is ridiculous. In spite of the experience of approximately a hundred years the engines of steamships and of railway trains still break in the course of their regular journeys and for all time engines will continue to break or stop from one cause or another. Therefore all the argument at the inquest and before the Court of Inquiry as to whether the engine of G-EBBX broke or choked or merely lost power was merely beating the wind. It never approached the real key to the situation which is that the machine should never have been where it was when the accident happened.

If the aeroplane had been fitted with proper high-lift wings designed for climbing it would have got off the ground sooner and, after climbing for so long as it did, instead of being a few hundred feet above the top of the hill to the South of the aerodrome it would have been possibly no higher above its starting point but it would have been so much nearer the precincts of the aerodrome itself that if the engine lost power, as the Court of Inquiry suggests, the pilot would have been able to turn without danger and would have been able to make a safe and slow landing in the aerodrome itself.

There is no doubt that the Croydon Aerodrome is a bad aerodrome, in that a machine getting off against the prevailing South or South-West wind has to get off uphill and therefore has not only to get its height above its starting place but also has to get its height above the hill-top before it can be considered safe in the event of sudden engine failure. Also there is no doubt that when the aerodrome is wet, as it always is during the Winter, the wheels of an aeroplane have to plough through the soft ground and so the machine needs a much longer run before getting off the ground. But these facts are only side issues.

The main issue is that every aeroplane should be fitted with wings of such type that it can pull itself out of the mud with the shortest possible run and can thereafter climb at such a steep angle that it is well above the hill-top by the time it reaches it. And it should also be able to turn and land slowly if unable to proceed on its journey.

Even if the Terminal Aerodrome were perfectly flat and had a tarmac surface all over there would still be exactly the same necessity for the use of properly-designed aircraft. After a machine has left the aerodrome it may still be compelled to land anywhere along its route and it must be designed so that it can be put down into a small field and get out of it again if the defect which caused the landing can be put right on the spot.

Wrong Materiel.

The D.H.34s which are at present used by Imperial Airways Ltd. hit the ground at something like seventy miles an hour when landing. Also they have to attain a speed of nearly seventy miles an hour before they lift off the ground at all, which means so long a run that there is very little chance of their getting out of a small field if compelled to land on the course of their journeys, even if they manage to get into it without damage.

The Handley Pages which are used on the London-Paris service do usually get off with a shorter run and they can be put on the ground much more slowly. But with full load their angle of climb is no better than that of the D.H.34 and if they are stalled through being pulled up to an angle beyond their proper climbing angle they also will stick their noses down and dive.

Imperial Airways Ltd. have on order a certain number of more or less experimental machines with three engines. But so far as one can gather these machines also are liable to dive when stalled.

Wrong Policy.

Any policy is a mistake which entails the use of aircraft which merely carry the greatest number of passengers on the least engine power regardless of other considerations, even though the actual quality of material and workmanship in the machines and engines may be above reproach.

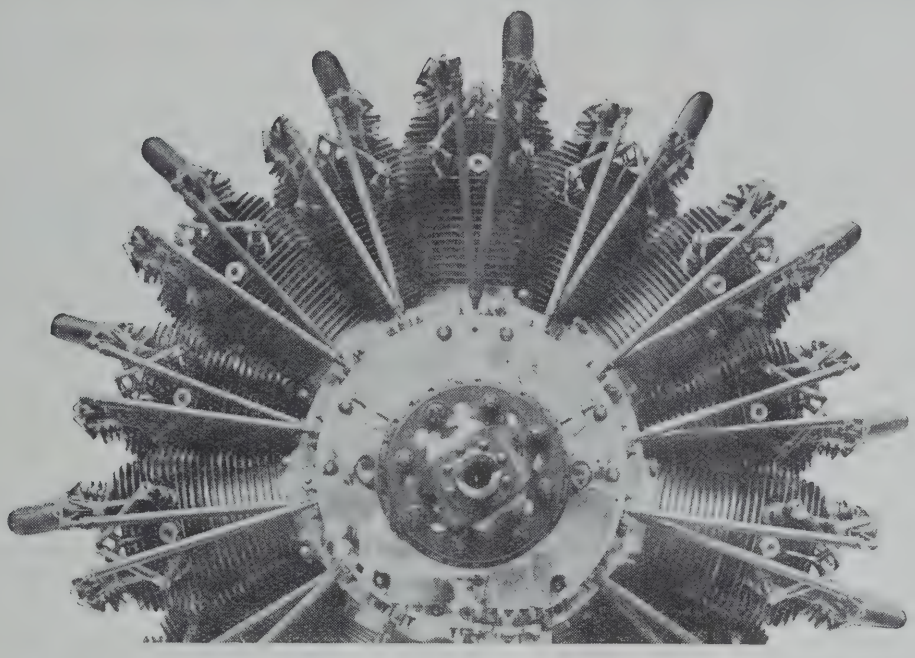
That is to say, the idea of raising as big an income as possible with the least possible expenditure and thus justifying the Government subsidy is erroneous. It does not look as if the Board had considered sufficiently the far greater question of demonstrating that Civil Aviation is a safe method of transport.

How little Imperial Airways Ltd. have done to convey the idea that flying is safe may be gauged from a leading article in *The Morning Post* on Feb. 11 which says:

"What the report shows is that it (aviation) is attended by the gravest dangers whose very nature is unknown and which therefore cannot be averted."

Of course this statement is as inaccurate as are many other views expressed by *The Morning Post* but the fact that it should exist at all in this Year of Grace shows how those responsible for Civil Aviation have missed their opportunities.

In common justice to the Management of Imperial Airways as distinct from the Board of Directors one would like to make it perfectly clear that in all one's experience of the running and maintenance of vehicles on land or sea or in the air one has never known a more perfect system than that of Imperial Airways Ltd. Whatever can be done by mechanical skill, by careful inspection and by conscientious work to attain as nearly as is humanly possible to infallibility in the engines and in the mechanism of the aeroplane has been done and is constantly done. The way in which the engines are overhauled and the way in which every detail of the machines is kept in perfect order is above criticism.



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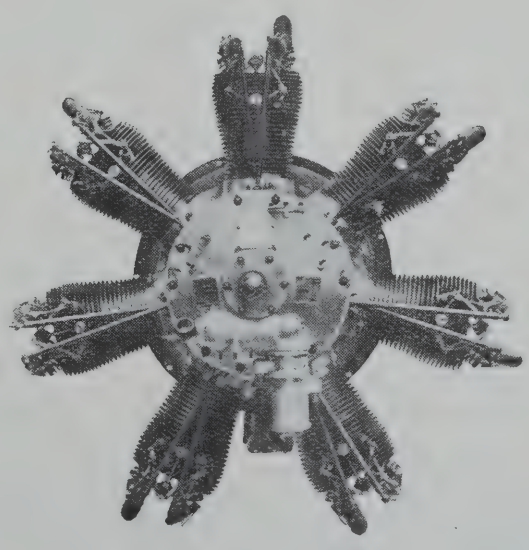
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At normal speed,
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Petrol consumption,
·55 pts./b h.p. ·312 Litres per b.h.p. hour.
Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
760 lbs., 346 kgs.



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LYNX
170 h.p.
7-cyl. Air-cooled.

The "Lynx" is an ideal engine for Training Aircraft. It is most accessible—being superior in this respect to any other aircraft engine. Fuel consumption is very low and construction very simple.

The following is the guaranteed minimum performance.—

At normal speed,
1,650 r.p m., 175 b.h.p.
Petrol consumption,
·55 pts./b.h p. ·312 Litres per b.h p. hour.
Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
460 lbs., 2.9 kgs.

The fault lies not in the management of the air line but in any policy which seeks for revenue instead of for progress. One suggests to those officials of the Air Ministry and of His Majesty's Government who are responsible for the granting of the subsidy to Imperial Airways Ltd. that not only are the machines which are in use, and very probably those which are on order, unsuited for the work which they have to do but that the firm's policy is equally unsuited to provide for the safe transport of passengers by air. The remedy seems to be either for the Directors to institute a new policy or for the Government to appoint new Directors.

The Real Damage.

The damage done to Civil Aviation by this accident must be quite considerable. It is quite probable that those enthusiasts who are sufficiently reckless or sufficiently ignorant to travel by air in any kind of aeroplane will continue to do so. And undoubtedly those people who make the cross-Channel journey by air once, just to say that they have done so and knowingly take the risk just for that once, will do so and will probably increase in numbers thanks to assiduous and costly advertising by Imperial Airways Ltd. But the great travelling public who have got to be persuaded off rail and boat transport into the air must have been thoroughly scared by the immense amount of publicity which this accident has received.

The mere fact that so much publicity has been given to the accident by the press is in a way a satisfactory sign of the increase of public interest in aviation. Accidents which have been just as bad have occurred in the past without attracting anything like as much attention. And the fact that it should have attracted so much attention is one of those instances of mob psychology which can only be explained on the supposition that the public is intensely interested in air transport. But a great deal of hard work will have to be done before public confidence in flying is re-established to the point which it had reached before this accident and its consequent publicity occurred.

Newspaper Comment

So far as the report of the Court of Inquiry is concerned the majority of papers have contented themselves with publishing extracts without any particular comment. But among the papers which have dealt with the subject critically are *The Times* and *The Morning Post*.

The Times, after commending the Air Ministry for holding the inquiry, points out that during the last seven months Imperial Airways Ltd. has flown 750,000 miles and has carried some 100,000 passengers without a single accident, and remarks on this as a "practical proof of the efficiency of their pilots, equipment and general organisation."

One submits that when our national air line can show a record of 7,500,000 miles for one fatal accident it may begin to argue that flying is as safe as travelling by rail. And not till then can we regard flying as a regular method of transport.

The Times very sensibly remarks that there is no foundation for the sinister rumour that pilots may sometimes be pressed to take their machines into the air against their better judgment.

Finally *The Times* gets at the root of the whole matter in the following sentence :—

> "If passengers are to be carried safely in the air, if the public is to be spared suffering such as that which the relatives and friends of those who lost their lives in the Croydon disaster had to endure, no financial consideration must be allowed to stand in the way of experiments and research by which, as far as is humanly possible, the risk of accidents may be reduced to a minimum."

This is saying in the usual polite and veiled manner of a public newspaper precisely what one has said openly in this article, namely, that the Department of Civil Aviation and the Directorate of Imperial Airways Ltd. are to blame for their wrong-headed policy.

The Morning Post publishes a leading article on the subject and a criticism by its Aeronautical Correspondent. Both appear to be coloured by *The Morning Post's* unconquerable inclination to attack the Air Ministry on every possible occasion. One has already quoted a sentence from this leading article indicating that the writer is entirely ignorant of his subject. In the same article the writer says :—

> "Passengers cannot possibly be freed 'from the danger of loss of control associated with stalling,' for the simple reason that stalling automatically and inevitably causes loss of control. The two things happen together."

This is entirely misleading, in that aeroplanes already exist which when stalled and sinking are still under perfect control. This is true of the Fairey Flycatcher and it is also true of the standard Fokker as used on the K.L.M. line. And still further improvements are known to be possible in this direction.

The Aeronautical Correspondent in *The Morning Post* is still further wide of the mark in his opinions. According to his idea the pilot of an aeroplane should be the best judge of whether any given machine is fit to fly or not. Anybody who has had much to do with running aircraft in quantities either in the Services or in Civil Aviation knows that the average pilot is the worst possible judge of the condition of his machine and engine. Some men will imagine that an engine is running perfectly smoothly when it is really shaking itself to bits, and others who are more sensitive will imagine that quite a smooth-running engine is rough. Apart from that an engine which feels rough may in fact be very much more reliable and very much more durable than one which is actually running more smoothly.

But one gives this Aeronautical Correspondent credit for his statement that the unsuitability of Croydon Aerodrome "has nothing to do with the accident which took place after the aeroplane had risen successfully from that aerodrome. Moreover, a machine that cannot rise from Croydon Aerodrome would indeed be a poor one."

That is more or less one's own main argument, except that nobody would accuse a Napier-engined D.H.34 of being a poor aeroplane. It is a very good aeroplane indeed but it is entirely unsuited for the work which it is set to do and its wing design is some six years out of date.

The Principles of An Air Line.

In conclusion one would like to set before the Air Ministry and those who are responsible for Imperial Airways Ltd. the briefest possible statement of the principles on which an air line ought to be organised.

These may be stated as follows :—

(a) The way to secure safety is to organise the whole Air Line on the supposition that every engine that ever gets a machine off the ground is liable to stop at any moment after it has left the ground.

(b) The aeroplanes themselves must be so designed that under no circumstances can they stall and nose-dive as do the machines at present in use.

(c) The aeroplanes must be fitted with wings which will get them off the ground with the shortest possible run and will allow them to alight at the lowest possible speed. Such machines exist to-day but they are not in use on any air line.

(d) All commercial aircraft should be made so that they do not turn over if they have to alight on the water and so that they do not sink when they have alighted on the water. (This is just as important for trans-Continental machines as it is for cross-Channel machines, because there are many patches of country where there is no ground on which it is possible to alight and a machine with a failing engine can only be put down in a lake or river.)

(e) All terminal aerodromes should be made so that aeroplanes can get off with a short run. (This can be done with radiating tarmac runways at comparatively low cost.)

(f) At intervals of not more than five miles along every route there should be properly arranged emergency landing grounds into which a fully-loaded aeroplane can be put without risk. (In the majority of cases such grounds can be made simply by removing trees from the hedges of comparatively small fields.)

(g) There should be proper observation posts along the regular routes to give notice of fog conditions and there should be proper signalling arrangements at the main aerodromes to transmit this information to pilots while in the air.

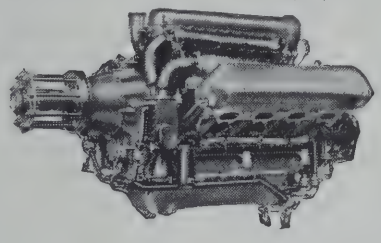
All these things can be done with such aeroplanes, such engines and such apparatus as exist to-day and with proper organisation something very like the railway rate of safety can be secured. So there is no excuse for such accidents to do occur.

In the future we may progress to flying and landing in fog and in the dark and in all sorts of weather. But for the present we can make very good progress in Civil Aviation with existing apparatus if only those who are responsible for Civil Aviation will consent to use that most uncommon commodity common sense.—C. G. G.

Brussels—Belgian Congo.

M. Thieffry, accompanied by MM. Roger and De Bruyck left Evère Aerodrome, near Brussels, at 08.00 hours on Feb. 12 in an attempt to fly to Kinshassa. The machine used was a Belgian-built Handley Page W.8F. (one Rolls-Royce Eagle XI and two Siddeley Pumas), named the *Princesse Marie José*. At 14.25 hours the machine landed at Dijon on account of a breakage of a petrol pipe. A landing had previously been made at Laperrière, 45 kiloms. north of Dijon, owing to a heavy snowstorm.

On the 13th the machine piloted by M. Roger got away from Dijon at 11.00 hours. An attempt was made to reach Lyons-la-Pignan, the end of the first stage, but owing to strong head winds this was abandoned and a landing was made at Lyons at 14.30 hours.



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The London Gazette.

Feb. 10.

GENERAL DUTIES BRANCH.—Flt. Lt. P. M. McSwiny is granted a perm. comn. in the rank stated (Feb. 11); Lt. H. E. Rew, R. Berks. Regt., is granted a temp. comn. as a Flg. Off. on seconding for four years' duty with the R.A.F. (Jan. 27); Flg. Off. W. B. O. Fox (Capt., Indian Army, retd.) is granted the hon. rank of Flt. Lt. (Jan. 23); Flt. Lt. A. L. Neale, M.C., takes rank and precedence as if his name appeared on the gradation list of Flt. Lts. immediately below that of Flt. Lt. A. W. Clemson, O.B.E., D.S.C. Reduction to take effect from Jan. 7; Flt. Lt. C. W. Hill is placed on half-pay, scale B (Feb. 11 to Feb. 20 inclusive); Flg. Off. F. J. Islip is transferred to the Reserve, Class A (Feb. 8). The S.S. comn. of Plt. Off., on probation, F. E. J. Croker-Walsh is terminated (Feb. 11).

MEDICAL BRANCH.—The following are granted S.S. comns. as Flg. Offs. for three years on the active list, with effect from, and with seniority of, Jan. 28:—C. G. J. Nicholls, M.B., B. Pollard.

RESERVE OF AIR FORCE OFFICERS.—The following are granted comns. on probation in the General Duties Branch in the rank stated (Feb. 10):—CLASS A—Flg. Off. S. C. O'Grady, M.C.; Plt. Off. L. C. Hillman. CLASS B—Flg. Off. K. G. Styles. Flg. Off. J. C. Joynt is transferred from Class A to Class B (Jan. 13); Plt. Off. A. Barron is transferred from Class A to Class C (Feb. 5).

Appointments.

Week ending Feb. 16.

GENERAL DUTIES BRANCH.—Squadron Leaders H. E. F. Wyncoll, C.B.E., M.C., to R.A.F. Depot on transfer to Home Estab., 28/12. A. J. Butler, O.B.E., M.C., A.F.C., to No. 216 Sqdn., Egypt, 16/1. A. T. Williams, to No. 2 F.T.S., Digby, 16/2. T. W. Elsdon and A. Coningham, D.S.O., M.C., D.F.C., to H.Q., Egypt, 17/12. A. J. Currie, to H.Q., Egypt, 1/1.

Flight Lieutenants R. B. Mansell, O.B.E., to No. 12 Sqdn., Andover, 20/2. A. Durston, A.F.C., to School of Naval Co-operation, Lee-on-Solent, 1/3. H. M. K. Brown, to No. 4 F.T.S., Egypt, 20/12. E. I. Bussell, to No. 12 Sqdn., Andover, instead of to No. 11 Sqdn., 16/2. J. Whitford, to No. 12 Sqdn., Andover, 24/2. W. R. Castings, M.B.E., to H.Q., Iraq, 6/2. J. D. S. Denholm, to No. 216 Sqdn., Egypt, 20/12. T. E. Salt, A.F.C., to No. 47 Sqdn., Egypt, 1/2. A. M. Blake, A.F.C., to Heliopolis Details, Egypt, 1/2. R. W. Dawes, to H.Q., Egypt, 20/11. H. W. Baggs, to No. 4 F.T.S., Egypt, 28/12. L. O. Brown, D.S.C., A.F.C., to Boys' Wing, Cranwell, 12/2 A. P. Ledger, M.B.E., to H.Q., Air Defences of Great Britain, 16/2. G. W. Hemming, D.S.C., and G. S. Shaw, to No. 480 Flight, Calshot, 16/2. H. O. Fellowes, to Stores Depot, Egypt, 16/1. J. S. T. Fall, D.S.C., A.F.C., to No. 4 F.T.S., Egypt, 2/2. A. J. Osborn, to No. 28 Sqdn., India, 5/1. A. J. Warwick, to Aircraft Depot, Egypt, 26/1. E. P. Roberts, M.C., D.C.M., to No. 14 Sqdn., Palestine, 27/12. H. S. Scroggs and E. F. Turner, A.F.C., to R.A.F. Depot on transfer to Home Estab., 28/12. E. O'D. Crean, to No. 2 Arm. Car Coy., Palestine, 27/12. B. D. S. Tuke, A. P. M. Sanders, J. S. Windsor, M.C., A. G. Jarvis, A.F.C., and J. Blackford, to R.A.F. Depot on transfer to Home Estab., 17/1. W. R. B. Annesley, to R.A.F. Depot on transfer to Home Estab., 3/1.

Flying Officers F. T. Jacobs, to the Packing Depot, Ascot, 27/2. W. F. Shaylor, to No. 17 Sqdn., Hawkinge, 20/2. J. Dunn, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 16/2. C. P. Wingfield, to No. 1 Stores Depot, Kidbrooke, 9/2. R. Legg, to No. 208 Sqdn., Egypt, 28/12. W. R. K. Atkinson, to Heliopolis Details, Egypt, 17/12. A. J. E. Broomfield, D.F.C., to No. 20 Sqdn., India, 5/1. R. D. V. Howard, to No. 4 F.T.S., Egypt, 12/1. C. Sutton, to Heliopolis Details, Egypt, 20/1. R. K. Emerson, to No. 216 Sqdn., Egypt, 15/1. S. T. Clemens, to Marine Aircraft Exper. Estab., Felixstowe, 16/2. E. A. Blake, M.M., to No. 480 Flight, Calshot, 11/2. J. C. Barraclough, H. E. Power, W. J. Shilcott, D.S.M., and S. Herbert, to R.A.F. Depot on transfer to Home Estab., 17/1. F. J. E. Feeny, D.S.O., D. F. Anderson, D.F.C., W. Bourne, F. Miller, R. W. Hill, F. J. Brunton, A. T. K. Shipwright, D.F.C., O. E. Worsley, J. L. Airey, D.F.C., and T. N. Stack, to R.A.F. Depot on transfer to Home Estab., 28/12. A. M. Reidy, to No. 14 Sqdn., Palestine, 27/12. G. A. Atkinson, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 28/12.

Pilot Officers S. R. Sunnucks, to R.A.F. Base, Calshot, 16/2. P. Jones, to No. 444 Flight, Leuchars, 13/2.

MEDICAL BRANCH.—Flight Lieutenant A. Briscoe, M.B., to R.A.F. Central Hospital, Finchley, 26/2. P. A. Hall, M.B., B.A., A. C. Ransford, J. B. Woodrow, and J. Prendergast, M.B., B.A., to R.A.F. Depot on transfer to Home Estab., 28/12. T. M. Walker, to R.A.F. Depot on transfer to Home Estab., 17/1. Flight Lieutenant (Dental) H. J. Higgins, to Aircraft Depot, Egypt, 17/1. Flying Officer (Q.Mstr.) P. H. Musgrave, to R.A.F. Depot on transfer to Home Estab., 28/12. G. J. Hanley, M.B., to R.A.F. Depot, 27/2. F. L. White, to No. 1 F.T.S., Netheravon, 6/2.

STORES BRANCH.—Wing Commander W. R. Bruce, O.B.E., to R.A.F. Depot on transfer to Home Estab., 28/12. Squadron Leaders J. A. Stone, to R.A.F. Depot on transfer to Home Estab., 28/12. H. L. Crichton, M.B.E., to R.A.F. Depot on transfer to Home Estab., 17/1. Flight Lieutenants E. M. Cashmore and L. A. Lavender, to R.A.F. Depot on transfer to Home Estab., 17/1. Flying Officers E. I. T. Duffield, to No. 4 Stores Depot, Ruislip, on transfer to Home Estab., 28/12. V. B. Ranford, to No. 216 Sqdn., Egypt, 16/1. H. A. Lotherington, to No. 28 Sqdn., India, 5/1. R. W. Stevenson, to No. 216 Sqdn., Egypt, 1/2. C. A. Longhurst, to H.Q., Egypt, 1/1.

ACCOUNTANT BRANCH.—Squadron Leader C. P. Ogden, O.B.E., to H.Q., Iraq, 15/1. Flying Officers G. W. Lynn, to R.A.F. Depot on transfer to Home Estab., 28/12. E. K. Greenhow, M.C., to No. 70 Sqdn., Iraq, 6/2.

CHAPLAINS' BRANCH.—The Revd. M. J. Eland, to H.Q., Palestine, 27/12.

An Investiture.

H.M. the King held an Investiture at Buckingham Palace on Feb. 12. Amongst those in attendance upon His Majesty was Air Commodore G. L. N. Newall, R.A.F., Aide-de-Camp in Waiting.

The following officer of the Royal Air Force was introduced into the presence of the Sovereign and invested with the Insignia of the Most Honourable Order of the Bath:—Air Commodore Arthur Longmore.

Aircraft Apprentices.

The Air Ministry announces that two examinations for the entry in September next of 700 suitable boys as Aircraft Apprentices will be held within the next few months.

The Open Competition conducted by the Civil Service Commissioners, Burlington Gardens, London, W.1, will take place on April 17. The closing date for the receipt of completed forms of application is Mar. 5. Candidates with special claims on account of their fathers' service in His Majesty's Forces who have not already applied for a "Service Nomination" should forward full particulars to the Secretary, Air Ministry (M.1), Kingsway, London, W.C., before Feb. 25.

The Limited Competition which is carried out by the Air Ministry in conjunction with the local education authorities will be held on June 2. Boys who are still at school should apply to their Headmasters with a view to securing a nomination from the education authority responsible for the school. If they have left school they should apply to the Advisory Committee for Juvenile Employment in their Area. Boy Scouts can apply to the authorities of the Boy Scout Association, and Territorial Cadets to the Officers Commanding their Units. The form of nomination for this examination must be received by the Air Ministry (A.E.) not later than May 5.

The Yarmouth Dinner.

The Fifth Annual Re-Union Dinner of the Great Yarmouth Command, R.A.F., will be held at Pritchard's Restaurant (79, Oxford Street, W.1) on Feb. 28, at 7 o'clock for 7.30. Tickets, 7s. 6d., excluding wine, may be obtained from R. Smith, 382, Hoe Street, Walthamstow.

No. 18 Squadron Old Comrades' Association.

In view of the wish expressed at previous Annual Dinners of the 18 Squadron Old Comrades' Association that ladies should participate in the gatherings, it is proposed to hold a Dance in the Ball Room of the Radio Club, 7, Great Newport Street, Leicester Square, W.C.2, on Friday evening, Feb. 27.

This is to be a "London Gathering" of the O.C.A., and it is hoped that a company of one hundred guests will attend, including Members *and their friends.*

There will be a good orchestra and liberal refreshments will be provided. Single tickets (inclusive), 4s. 6d. Double tickets, 9s. Dress optional.

The interest and attendance of all old Members of the Squadron is needed to make the affair a success and so it is hoped that all will come and bring their friends.

In order to assist in making the arrangements Members are asked to communicate as soon as possible with Mr. E. J. Westley and Mr. Allan Simpson, at 7, Whitbread Road, Brockley, S.E.4.

No Martlesham Dinner.

Owing to lack of support the organisers of the Annual Martlesham Dinner have been compelled to cancel the arrangements for this year.

Boxing in Iraq.

A highly interesting and successful series of Novices' Boxing Competitions were held at the A.R.S., Iraq Aircraft Depot, Hinaidi, Baghdad, Iraq, on Jan. 30 and 31.

These competitions (which were organised by the newly-formed R.A.F. Boxing Association (Iraq), of which H.E. the High Commissioner in Iraq—Sir H. R. C. Dobbs, K.C.S.I., K.C.S.E.—is a Patron and A.V.M. J. F. A. Higgins, C.B., D.S.O., A.F.C., A.O.C. British Forces in Iraq, is the President), included entries from practically every R.A.F. unit in Iraq, boxing teams travelling from Basrah and Mosul to attend the competitions.

At the conclusion of the competitions on Jan. 31, the A.O.C., before presenting the prizes, in a short, comprehensive speech, spoke in glowing terms of the success which had attended the first meeting of the newly-formed Association and hoped that the same success would attend the future meetings to be held during the season. Speaking of the fights during the competitions, he said that all the fights had been well fought and everybody had done their best. He specially mentioned No. 4 Armoured Car Company with regard to their success in the competitions, also No. 6 Army Co-operation Squadron who had travelled from Mosul, and No. 30 (B) Squadron whose personnel are at Kirkuk. In conclusion, he congratulated the organisers of the competitions on the excellence of their arrangements.

During Polo Week (April) the R.A.F. will fight the Army for the Championship of Iraq. It is hoped to bring teams from India, Egypt and Palestine in October to fight for the Inter-Command Championships.

The following is a short record of the fights in the competitions:—

Middle-weight semi-final and final.—L.-AC. Matthews, of Air H.Q. Baghdad, and AC.1 Burgess, of No. 4 Arm. Car Coy. This proved to be a very interesting fight, in which glimpses of science were seen. Matthews proved the better man, and won the fight on points.

Fly-weight final.—AC.1 Sergeant, "A" Team, I.A.D. v. AC.1 Walker, "B" Team, I.A.D. Sergeant won his fight on points after going the full three rounds.

Bantam-weight final.—AC.2 Stovold, Stores Depot, Basrah v. AC Judge, "A" Team, I.A.D. Judge gained the decision on points.

Light-weight final.—L.-AC. Brooks, No. 70 (B) Sqdn. v. AC

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The reliability of the Reed Airscrew has been demonstrated by such flights as the one recently made from New York to San Francisco; this flight of 2,645 miles, which was made in a Curtiss Pursuit Plane fitted with a Reed Airscrew was completed between dawn and dusk of the same day.

The Fairey-Reed Airscrew is the only successful solution to the airscrew problem, in addition to being more efficient aerodynamically than the wooden type, it is more reliable and durable, it is unaffected by the most tropical heat, is not damaged by hail, rain, small stones, long grass, etc., and does not deteriorate with age.

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Richardson, "A" Team, I.A.D. Brooks pressed throughout, although handicapped by reach. He won on points through sheer tenacity.

Welter-weight final.—AC. Watson, Station H.Q., Hinaidi v. AC.1 Upfield, "B" team, I.A.D. Watson won on points.

Light heavy-weight (final).—L-AC. Calder, "A" team, I.A.D. v. AC.1 Hill, No. 4 Arm. Car. Coy. Calder won on points.

Heavy-weight (final).—AC. Flume, No. 55 (B) Sqdn. v. L-AC. Emmet, No. 6 (A.C.) Sqdn., Mosul. Flume pressed from the start and knocked out his man in the first round.

In a special 6-round contest between Cpl. Titmus, of the Beds. and Herts. Regt., Heavy-weight Champion of India, 1924, and L-AC. Cleeve, winner of the Wakefield Championship, England, 1924, Cpl. Titmus was proclaimed the winner after knocking out his man in the third round.

In a 3-round contest between Lt. E. G. Steel, M.C., of the Beds. and Herts. Regt., and Plt. Off. Lewis, of the R.A.F., Plt. Off. Lewis succeeded in knocking out his opponent in the last round, after a very spectacular fight.

A special prize was awarded to AC.1 Green, of No. 4 Arm. Coy., for the gamest loser of the night.

Air Affairs in Parliament.

TRANS-JORDANIA.

In the House of Commons on Feb. 11, in the course of the Debate on the Supplementary Estimates (Middle Eastern Services), LIEUT.-CMDR. KENWORTHY, raising the matter of the administration of Trans-Jordania, said that certain dramatic events had occurred in the Arabian Peninsula. The Wahabis had secured successes against the forces of the King of the Hedjaz. An attack had been made on Trans-Jordania which had been beaten off with the aid of the Air Force, but this was only a feint and Ibn Saud's forces had attacked Mecca. LIEUT.-CMDR. KENWORTHY thought that if H.M. Government proposed to continue in its policy of propping up the various scions of the House of Hedjaz this sum (£10, a "token" vote) would not be enough. He thought we had backed the wrong horse. We used to subsidise Ibn Saud himself in the Coalition days.

MR. ORMSBY-GORE (Under-Secretary of State for the Colonies) said that the Supplementary Estimate represented a new form of service in the Middle East. The saving on the defence sub-head in connection with Palestine and Trans-Jordania Vote would amount to a larger sum than the amount now asked for because Trans-Jordania has now a definite revenue of its own collected locally. That sum is insufficient for the maintenance of the Chief British representative and his staff as well as for the payment of local Arab administration.

Mr. Ormsby-Gore went on to say that in Trans-Jordania there was an important air station on the route to Iraq and for that reason it was essential that there should be some local force under the command of a British Officer for the protection of that air station. We also had duties still as mandatories though they had been considerably modified. Further, we were internationally responsible on the frontier of the French mandated territory of Syria. He did not think that there was any immediate threat from the Wahabis. The Government was satisfied that with such Air Force as they could maintain there in the present conditions that obtain in Trans-Jordania and with the considerable distance from there of any hostile forces, there would be a net saving under the defence sub-head.

R.A.F. OFFICERS' PAY.

In the House of Commons on Feb. 11, in reply to a question by COL. DAY, the SECRETARY OF STATE FOR AIR said that the reduction of Flying Officers' rates of pay from 25s. per day to 23s. 8d. per day in July last was in accordance with the condition attached to the new rates of pay in 1919.

OBSOLETE AIRCRAFT.

In the House of Commons on Feb. 9, SIR F. SYKES asked the SECRETARY OF STATE FOR AIR if he would state the number of aircraft written off Royal Air Force charge during the past 12 months by reason of accident, obsolescence, and general deterioration, respectively; the average period that had elapsed in each case between the time the machines were first taken on R.A.F. charge and the date of writing off; and the average flying hours in each case of the machines during that period?

SIR S. HOARE: During the 12 months ended Oct. 31 last, 339 aircraft were written off charge owing to accidents and 81 for general deterioration. In each case the average age was about five years and the average flying life about 130 hours. For the purpose of comparison, however, the total age and total flying life are hardly relevant, the date of last reconditioning being a more correct basis for any comparison. I regret, however, that statistics on this point could not be made available without undue labour. In the same way it should be borne in mind that there is no necessary connection between age and hours flown, as most aircraft, particularly in the case of War-time machines, have been for a considerable period in store. During the same period no aircraft were written off of types which were declared obsolete during the 12 months to which the question relates; but 110 were written off which were non-standard at the date of write off, comprising types still in the experimental stage and those previously declared obsolete. Particulars of the average age and flying life of such aircraft would be difficult to compile, and would afford no useful basis of comparison with the other classes.

R.A.E. SALARIES.

In the House of Commons on Feb. 9, MR. H. WILLIAMS asked the SECRETARY OF STATE FOR AIR if he was prepared to reconsider the terms offered in an advertisement published in several engineering papers for an assistant engineer for the Royal Aircraft Establishment, Farnborough, namely, £3 a week and Civil Service bonus for a professional man with the degree of Bachelor of Science and several years' practical professional experience?

SIR S. HOARE: The terms in question are offered as a commencing salary only to test assistants, not to assistant engineers, and candidates who prove their worth have opportunities of early advancement to a higher rate of pay. I do not consider that in the circumstances they need revision.

[For a competent engineer the wages are absurd, and are below those of a dustman or tram-driver. But for such work as seems to be done at the R.A.E. they appear to be adequate.—ED.]

Paris—Lake Chad.

On Feb. 10 the de Goys expedition, which has been attempting to fly from Paris to Lake Chad and back, met with disaster. In attempting to leave Niamey the machine piloted by Lieut.-Col. Vuillemin stalled and crashed. Col. Vuillemin is in a serious condition, Capt. Dagneaux and Sergt. Knecht, a mechanic, were injured, and Sergt. Vendelle, the wireless operator, was killed.

As a result the expedition has been abandoned and instructions have been given to Capt. Pelletier Doisy, the pilot of the remaining Blériot biplane, to proceed to Dakar.

Considerable adverse comment has been published in the French press concerning the whole expedition, one critic contending that the expedition proved to be a fiasco and that the only record it broke was the record of breakdown.

One cannot pretend to guess the cause of the accident to Col. Vuillemin. One report mentioned that the tail setting of the machine on getting off was wrong, but it is almost impossible for so experienced a pilot as Col. Vuillemin to overlook such a detail as this. Suspicion is more likely to fall on the arrangement of the four 180 h.p. Hispano-Suiza engines. Both Col. Vuillemin and Capt. Dagneaux are pilots of extraordinary brilliance. Col. Vuillemin has been flying for twelve years and has never had an accident. Apart from a brilliant career during the War, he has accomplished such fine flights as Paris-Cairo, Paris-Timbuctoo-Dakar, Paris-Bucharest in a day, has twice won the Michelin Cup and has carried out numerous shorter, but equally meritorious cross-country flights. A man of such experience would hardly be likely to attempt to take off with an incorrect tail setting, or for that matter be guilty of any error of judgment that would lead to such an accident.

The Hedjaz War.

The following information has been received from a correspondent:—

"Sherikoff, one of the Russian pilots, was killed on Sunday, Jan. 18. Apparently he went up with a couple of natives to drop bombs on the Wahabis. He hung on to a bomb too long and it exploded in the machine which was at a great height and fell in the Wahabi lines. The bombs were converted shells.

"The Wahabis have carried out two raids on the Jeddah defences and it was quite amusing on each occasion. Guns fired all over the line—even if they didn't see any Wahabis. Yesterday in fact we saw quite a number of the enemy who actually came almost up to the Jeddah defences and pinched a herd of sheep and got right away before they were noticed!! However guns blazed out again and cavalry dashed out—damned brave when there is no enemy—but the Wahabis beat 'em easy."

The Aeroplane Album.

There are still a limited number of copies of THE AEROPLANE Album of British Aircraft available to those who have not yet acquired copies. This publication, which is produced in the finest possible photogravure, contains 46 pages of photographs of the most modern British aeroplanes. Copies may be had at 2s. 6d., post free.

The Rhymes of Rufus Ruderbar.

No. 2.—THE KIWI.

[*Natural History Note*:—The Kiwi or Apteryx is a New Zealand bird which, through long disuse, has lost the use of its wings to propel it through the air. *Authority*—cigarette cards, *passim*.]

No bird with Kiwi can compare
 For wiliness profound;
Naught ever urges him to fare
On pinion wide to upper air:
 He stays upon the ground.

Into the blue he never springs
 With shrieks of sheer delight;
For, though he wears a pair of wings,
'Tis ages since he used the things;
 He's lost the art of flight.

His argument's a wily one,
 Its sense of logic's high:—
"One act that all good sportsmen shun
Is shooting birds that only run;
 It's therefore rash to fly."

"And why should I a living seek
 By means of airy dash,
When I can always stuff my beak
And daily grow more fat and sleek,
 Here, where I cannot crash.

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Some extracts concerning the recent flight of 8,500 miles round Australia from "The Aeroplane" of May 22nd, 1924, entitled

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AERODROME CONDITIONS AND THE GETTING-OFF PROBLEM.

The inquiry into the crash of G-EBBX at Croydon on Christmas Eve has drawn a good deal of public attention to the shortcomings of Waddon Aerodrome under certain quite usual weather conditions, and to the fact that the Air Ministry propose to expend a large sum on the extension of the surface available in order to overcome these defects.

Waddon Aerodrome in its present form is a very fair-sized piece of open ground. It is by no means as accessible from London as is desirable in the interests of air traffic, but despite its relative remoteness from the centre of the town the actual land is already fairly valuable as a potential building site, and the prospect of finding an equally suitable space of the same size closer in to London is fairly remote. If it is a fact that Waddon is really too small, and that aerodromes for modern commercial machines must be notably larger than Croydon is now, then it seems distinctly improbable that it will ever be possible to provide aerodromes except at considerable distances from the cities they are intended to serve.

Alternatives to Larger Aerodromes.

To use a large aerodrome is the simplest and most obvious way of dealing with the problem of getting a heavily-loaded aeroplane safely into the air. But it is an extremely expensive method and one which automatically leads to the forcing of aerodromes out into more and more inaccessible situations. There is an alternative method which so far does not seem to have been given due attention. That is to consider how the space required to take off can be reduced. One method of doing this has of course been considered—that of increasing the power available for acceleration by increasing engine power. For commercial purposes the urgent necessity for increasing the load carried per h.p. rules this method out of court. It is possible to provide accelerating power from without. Catapult gears are not entirely unknown and unheard of arrangements, and a catapult to accelerate a 6,000-lb. machine to 60 m.p.h. in 50 yards would cost a good deal less than the proposed extensions to Croydon.

Reducing the run required to reach flying speed is of course not the whole problem involved, but it is a very large part of it. The catapult seems to be the only logical ultimate solution to this particular part of the problem of getting commercial machines into the air in a restricted space, but it is probably a little too much to expect the idea of catapulting "air liners" into the air to appeal either to the public or to the Air Ministry at the present moment. But it is by no means the only method by which the getting off run may be reduced.

What Determines the Get-Off Run?

An aeroplane during its get-off run is a body acted on by certain quite definite forces and obeying the ordinary laws of mechanics.

The rate at which its speed increases is determined solely by the ratio between the force available for acceleration and the mass. The force available for acceleration is the airscrew thrust, less the total resistance of the machine itself to forward motion. The resistance of the machine is composed of various items. There is the air resistance—which may be taken as being proportional to the square of the speed. That is to say the air resistance is zero when the machine is at rest, is small at low and moderate speeds, and becomes very large at high speeds. Then there is the ground resistance—which is practically the rolling friction of the wheels with the ground. The amount of this resistance depends on a number of factors—such as the type and size of the tyre used, the friction of the wheel bearings, the nature of the surface of the aerodrome, and the weight carried by the wheels.

With the same wheels and bearings and on the same surface in the same state the rolling resistance is proportional to the total load on the wheels, and may be expressed as a fraction of this total load. This fraction is usually known as the coefficient of traction.

Rolling Resistance.

When the machine is at rest the whole weight is carried on the wheels. The rolling resistance is then the weight of the machine multiplied by the coefficient of traction. As the speed increases the wings will begin to lift, and so reduce the weight carried by the wheels. The rolling resistance is therefore reduced, finally becoming zero when the machine leaves the ground. Precisely at what rate the wheels are relieved of their load with increasing speed depends on the use made by the pilot of his elevators during the run, but for calculation of the resistance during getting off it can be taken that the lift is proportional to the square of the speed, becoming equal to the weight at the getting-off speed. This assumes that the incidence is kept constant during the whole run.

If the aerodrome surface is not level, there is an increased resistance when the machine is taking off up-hill equal to the weight of the machine multiplied by the gradient—that is climbing a slope of 1 in 100 adds one-hundredth of the machine weight to the resistance.

For any given machine and aerodrome, the weight of the machine, the air resistance at any given speed, the slope of the ground, the airscrew thrust available, and the getting-off speed may be considered as known, or at least easily-ascertainable, factors.

What is the Rolling Resistance of an Aeroplane?

The only other factor which affects the getting-off run is the coefficient of traction. This can be very easily measured for any given set of conditions, but it cannot be regarded as in any way constant for a given machine, because it undoubtedly varies over a very wide range with changes in the state of the aerodrome surface. As a matter of fact nobody appears as yet to have taken the trouble to experiment with the rolling resistance of aeroplane undercarriages on varied types of surface. That the probable range of variation is very large, however, can be deduced from the known facts as to the resistance of other wheeled vehicles.

With steel wheels on clean steel rails the rolling resistance is about 7½ lbs. per ton—a tractive coefficient of about .003. The resistance of a pneumatic-tyred motor-car on a hard, smooth road, is three to four times as much—giving a coefficient of from .009 to .012. On a gravel road this resistance may again be doubled or trebled, rising to nearly .04. On soft ground the resistance may rise to much higher figures.

Aeroplane wheels running on plain hubs are unlikely to give figures as low as those obtained on a car on the same surfaces, and on the waterlogged grass, which characterises the average British aerodrome in wet seasons, the tractive coefficient may rise to much higher values.

Probable Values under Various Conditions.

Standard aeroplane practice places the wheels at an angle of about 15° ahead of the C.G. Under these conditions an aeroplane will stand on its nose sooner than move forward when the coefficient of traction reaches .25. Ground conditions in which a machine with such an undercarriage disposition will turn over when taxying, unless the pilot uses a good deal of elevator to hold the tail down, are by no means unknown—which suggests that a tractive coefficient of .25 may be reached on a rain-soaked aerodrome, and that a coefficient of .20 is not an unusual one on British aerodromes.

As against this figure it can safely be said that a coefficient of not more than .04—that is one-fifth of the rolling resistance likely to be found on really wet earth—can be secured on a tarmac runway. Is it worth while to lay down tarmac getting-off ways at an aerodrome such as Croydon? To answer this question it is necessary to estimate the getting-off run required by a normal machine under various conditions as to ground friction.

To do this a machine has been considered with the following characteristics: Weight, 6,000 lbs.; getting-off speed, 60 m.p.h.; total air resistance at 60 m.p.h., 1,500 lbs.; airscrew thrust available, from 0 to 60 m.p.h., 2,000 lbs. These characteristics are not taken from any existing machine, but they represent a machine of 450 to 500 h.p. loaded to about 11 lbs./sq. ft. and 12 to 13 lbs. per h.p., which would have an initial climb of 440 ft. per min. at 60 m.p.h., and a good deal faster climb at about 75 m.p.h. The machine has therefore rather more reserve power than the majority of present-day commercial machines of about this size, and should therefore have a somewhat better take-off than most actual machines.

Tarmac versus Soft Grass.

With the tarmac conditions—that is a tractive coefficient of .04—this machine would take 14 seconds and cover 240 yards before reaching 60 m.p.h. If the resistance rises to four times as much, which it pretty certainly does on soft ground, the time becomes 20 seconds and the distance 330 yards. If the resistance becomes five times as great—that is a tractive coefficient of .20—the time taken is 25 seconds and the distance 395 yards. This is an increase in the run required of 155 yards, or 62 per cent. 155 yards does not sound very much, but the machine in question has a climb of 1 in 12 at 60 m.p.h., so that with the short run it can be at 155/12 yards, or 39 ft., above the ground at the place at which it is just off with the long run. And the difference in run between high resistance and low resistance conditions will be greater with a machine with a more sluggish take-off.

If the aerodrome is not level, and, as is the case at Croydon, the machines may have to take off up-hill, a high ground resistance produces an even greater effect. As already mentioned the effect of the gradient is to add a constant amount to the total resistance which depends only on the gradient. It may therefore be regarded as a reduction in the total thrust available. The greater the ground resistance, the larger is the proportion of the surplus thrust available

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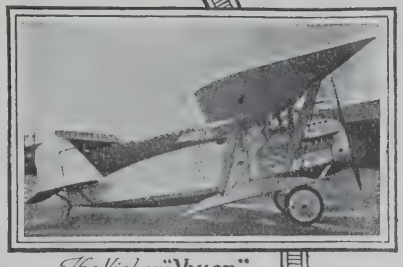


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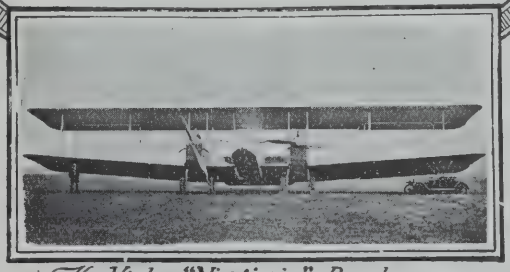
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for acceleration, represented by hill-climbing thrust. Assuming that the machine has to climb a gradient of 1 in 40 while taking off, then the run required with a tractive coefficient of 0.4 is increased from 240 yards to 282 yards. With a ground resistance coefficient of .16 the run is increased by the hill from 330 yards to 418 yards, and if the coefficient rises to .20 the run goes from 395 yards to 511 yards.

If the resistance figures suggested above are reasonably correct, the effect of a tarmac getting-off runway on an aerodrome with a slope of 1 in 40 may be to reduce the getting-off run to little more than half that which may be necessary on a rain-sodden grass surface. There is good reason to believe that the figures are fairly near to the truth—if they were very far from it the results of bad ground conditions at Croydon Aerodrome would not be so acute as experience proves them to be.

A D.H.34 under good conditions can take off in half the run sometimes needed to get off up-hill at Croydon, and this would not be the case if the difference in ground resistance actually encountered was not of the order suggested above.

It may be objected that in the estimates of getting-off run made above, the influence of wind has been neglected. This is perfectly true, but practically wind does not very greatly affect the argument. If there is a head wind of 20 m.p.h. the machine starts to accelerate from the conditions equivalent to 20 m.p.h. ground speed in a calm, and the run required will be shortened by the distance which would be taken to reach 20 m.p.h. with no wind. In no case is this distance very great—it varies for the machine considered above only from 10 yards on level tarmac to 42 yards under the softest ground conditions, and the up-hill grade.

Wind and Down Currents.

If the wind reaches 30 m.p.h. the run under the worst conditions is shortened by 98 yards and that under the best by 22 yards. Taking off up the 1 in 40 hill in a thirty-mile-an-hour wind, tarmac would need 242 yards run and soft, wet ground 413 yards. The effect of the wind is to reduce the advantage of the hard track, but until the wind speed is well over half that of getting-off it does not make any very great difference in the proportionate extra length of run imposed by high ground resistance. And when the wind gets to much higher speeds the getting-off problem solves itself.

There is another point which has been raised in connection with Croydon Aerodrome and that is the existence of a marked down-draught in the region just after that of taking off. A machine getting off head to wind and up hill must be in a down-draught. So long as the machine is on the ground, or quite close to it, the wind cannot be very far from parallel to the earth. While the machine is actually on the ground, the allowance made for extra thrust required to climb the surface gradient covers the down-draught effect. In very hilly country it is possible that the wind may be very far from parallel to the ground, even only a few feet from the surface, and such cases would require special treatment. But in the case of Croydon this can scarcely be the case except under very unusual circumstances.

When once the machine is in the air, the effect of down-draught is to reduce the effective rate of climb. There is no method by which this fact can be overcome—the only thing that can be done is to provide an adequate rate of climb once the machine is off the ground. What constitutes an adequate rate of climb depends on the room available after taking off, and before reaching impossible landing ground. In other words, the more room there is between the point of leaving the ground and the point of passing the aerodrome boundary, the less rate of climb is necessary. On a given aerodrome area, the shorter the get-off run required, the more room there is to climb before reaching the limits of the aerodrome, and, therefore, under any given conditions, the higher a given machine can climb before reaching this limit. If there is a down-draught which reduces the effective rate of climb, more room is required to achieve any given safe height than if no such condition exists.

The possibility of meeting a down-draught shortly after taking off therefore only makes it the more necessary that the getting-off run should be reduced to a minimum. To sum up therefore it may be said that to reduce the maximum run necessary to take off by 250 yards, is precisely equivalent—so far as safety goes—to adding 250 yards to the length of run available on the aerodrome.

Why Waste Money?

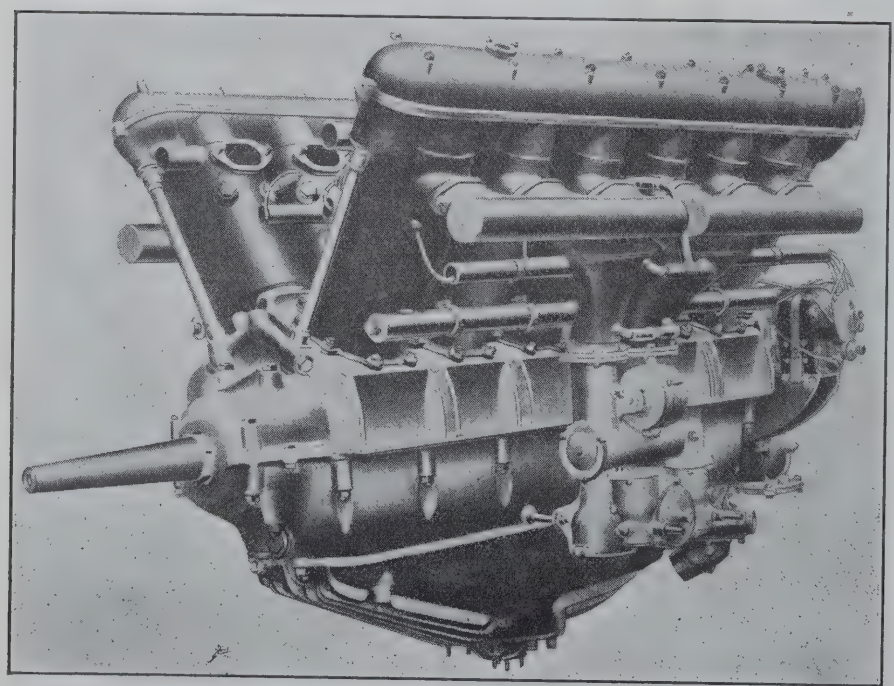
Under the circumstances therefore it would seem that to proceed to expend £250,000 on enlarging Croydon Aerodrome when in all probability some £25,000 spent on providing a few tarmac runways would be equally effective, is not merely unnecessary, but is likely to do a good deal of harm. It can easily be understood that the prospect of possessing one of the largest, most expensive, and least accessible aerodromes in the world must appeal strongly to the Department of Civil Aviation—but to those who are interested in getting on with flying rather than with keeping those who fly under proper control, the idea is scarcely so attractive.—W. H. S.

Variably-geared Engines.

It is now generally known that Rolls-Royce, Ltd., have recently produced an engine known as the Eagle XV which is fitted with a two-speed reduction gear arranged so that gear may be changed in flight. This engine is still under trial and no information concerning the results which have been attained with it are yet available. Nevertheless the subject of variable gears for aircraft engines is one of distinct interest, particularly in connection with the problem of getting heavily-loaded machines off the ground or water in the shortest possible space.

The proposal to use variable speed gears on aircraft engines has often been made in the past, and at first sight it seems strange that the suggestion has not borne fruit ere now. The problems provided by the combination of an airscrew, an engine and a variable gear when fitted to a given machine are however far from being as simple as might at first be imagined. On the other hand the need for improving the aeroplane's getting-off performance is becoming more and more acute as machines grow more efficient, and carry heavier loads, and the possibilities of the two-speed gear therefore deserve to be considered.

It is therefore proposed to discuss the matter at some length in a forthcoming issue of this paper.



The Panhard and Levassor 500 h.p. over-dimensioned and supercompressed engine This engine has been in existence for some years but has not yet come into use—presumably because of its somewhat large weight per h.p. at sea-level.

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On American Aircraft Developments.

From a variety of sources in the United States it has been possible of late to acquire odds and ends of information which ought to be of interest to those people in the R.A.F. and the British Aircraft Industry who are sufficiently wise to take an intelligent interest in American aeronautical progress.

The first piece of information concerns the competition which was held recently at McCook Field, an institution which corresponds fairly exactly to our Royal Aircraft Establishment at Farnborough except that it is under purely military control. This competition was for observation or Army co-operation aeroplanes.

So far the U.S. Army Authorities have not officially issued any information but one gathers that the Douglas firm which built the famous World-cruisers was awarded the first prize and an order for fifty machines. It is said that for sheer performance the Curtiss topped the list, with Douglas second, but that the much lower price of the Douglas clinched the deal.

Then the Authorities decided that as the Douglas Factory is not yet equipped on a quantity-production basis Mr. Douglas was only to have a contract for fifty machines out of the hundred which are required. It is rumoured that the Army then tried to induce the Curtiss Company to sub-contract for the remaining fifty. Where the joke comes in is that the Curtiss firm declare that they cannot build the machines at the price quoted by the Douglas people and that the Army is reluctant to pay the Curtiss firm a higher price than they are to pay Douglas.

Apart from that the U.S. Law insists that quantity-orders for aeroplanes must be given to the lowest bidder apparently irrespective of quality. The result is another deadlock in supplies for the Army Air Service.

An informant states that the Curtiss XO (Experimental Observation ship)—which has no relation to the dear old Curtiss OX 90 h.p. engine—is very similar to the famous Curtiss P.W.8 pursuit-ship, except of course that it is larger in order to carry a bigger load and to accommodate the Liberty engine with which all the observation craft in the competition had to be equipped.

On the other hand, the Douglas XO is a reduced replica of the World-cruiser having a 40-foot span instead of a 50-foot.

McCook Field itself, still seemingly having unbounded faith in its own engineering genius, produced an assortment of aeroplanes for its own competition. A well-informed correspondent in the States says that one of these machines seems to have been built to the designs of Herr Heinkel, the well-known German aircraft designer, but that nobody knows how McCook Field got hold of him. The mystery is deepened by the fact that the Cox-Klemin firm entered an XO craft for the competition which is purely of Heinkel design.

Among the McCook Field products were various modified de Havillands, one of which has an inverted Liberty engine similar to that modified by Mr. Grover Loening for his new amphibian. Another of the official D.H.s had the Loening N-strut wings.

The Atlantic Aircraft Corporation, which is really the Fokker Company, entered a Fokker CO-4 and also a de Havilland 4 with a steel tube welded fuselage, of which fuselages they have a hundred on order.

Mr. " Bill " Boeing of Seattle, who has built a number of welded steel fuselages for D.H.4s also entered a machine of that type.

Reference to the D.H.4 with the inverted Liberty produces the information that the ejaculations of joy with which the inverted engine was greeted at first in official circles are gradually dying out. The reason is that people have found that although the visibility is improved with this engine the head-resistance of the craft is quite considerably increased and the performance suffers in consequence.

Naturally this deterioration is peculiar to the aeroplane itself. It does not involve the engine, which in fact works surprisingly well. One imagines that the trouble is simply that the cylinder heads do not fit neatly into the lines of the bottom of a D.H. fuselage.

Mr. Grover Loening has proved that an inverted Liberty can be properly built into a machine, for nothing neater has been seen than the way in which the engine is cased into his new amphibian.

This amphibian is a real success for it has the performance of and manœuvres as handily as an ordinary D.H.4 even though, as a correspondent remarks, it does look like a flying Chinese river gunboat. The actual useful load carried by the amphibian is not very high but that is probably due to the necessary weight of the flying boat hull and doubtless the performance can be increased in later designs.

In addition to the competition for observation machines with Liberty engines McCook Field have also been holding as a side-show a competition between Curtiss, Douglas and Wright observation craft, the first two fitted with the Packard 1-A-1500 engine and the last with the Wright T-3 engine.

The Packard engine is still unproved. It is quite pretty to behold but so far as one can gather it has not yet done any considerable amount of flying.

The Engineering Division of the U.S. Army Air Service has just asked for bids for the construction of a heavy bombing machine to be fitted with the 800 h.p. Packard 1-A-2500 engine. So far one has not heard that this engine has flown at all. The machines to which it is to be fitted have to be of all-metal construction with fabric covering.

Good reports are to hand of the performances of the Wright Cyclone engine. This is a nine-cylinder radial air-cooled which is said to develop well over 400 h.p. It was produced by the Wright Aeronautical Corporation expressly at the Navy's demand for use in observation and torpedo machines to replace the Liberty. The engine weighs less than two lbs. per h.p. and its outside diameter is no greater than that of the Wright Whirlwind which develops only 200 h.p.

One saw the engine in its initial test stages when one was in the States but at that time one was bound to secrecy about its existence as it was on the Navy's secret list. As however this information comes in the ordinary way of correspondence one assumes that the ban of secrecy has now been removed, and that one is at any rate at liberty to refer to its existence. The latest information is that the Cyclone has now passed the 50-hour type test of the Navy Bureau of Aeronautics, which test is said to be one of the most severe in the World.—C. G. G.

A Balloon's Escapade.

On Jan. 31 the Belgian aeronaut Veenstra had arranged to ascend from Brussels in his balloon Prince Leopold in an endeavour to break the distance record. At 08.00 hours, after many delays, everything was ready for the *lachement* when the gas-bag broke adrift leaving the astonished aeronauts sitting in the basket on the ground. After a chase in an automobile, the over-enthusiastic gas-bag was found not far from Brussels in a debilitated condition.



The Loening Amphibian with the inverted 400 h.p. Liberty engine.

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(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.



The "Baby Bomber" light aeroplane entered for the Dayton meeting by Mr. Snyder. This machine was originally built in 1919 and 20 and was flown in 1921 and then refurnished for this year's races. The engine—an Indian—gave out during the first of these and the machine turned over.

It has a span of 21 ft. 7 ins., 147 sq. ft. of surface, and weighs 500 lbs. fully loaded.

Flying in Australia,

Owing to pressure of business Mr. Hinkler was unable to read his paper on "Flying in Australia" before the Institution of Aeronautical Engineers on Friday, Feb. 6, and the paper was read by Major F. A. de V. Robertson. The paper, which is of very considerable length, gives a very full account of Australia—its climate, physical features, the opportunities which it affords for flying, and much interesting data concerning the work of the various Australian air lines. It indicates that there are much better prospects for the successful operation of air lines in a sparsely-populated country of great distances and undeveloped communications than are to be found in the more civilised parts of Europe.

It is unfortunately far too long to reproduce here, and too full of really interesting matter to be summarised without serious injustice to the author.

Everyone who is interested in the development of Aviation should bespeak a copy of the Minutes of Proceedings of the Institute wherein it is to be reproduced in full.

The American Aircraft Industry.

A Special Committee representing the entire Aircraft Industry of the United States recently called on President Coolidge, with Mr. Charles Lawrance, Vice-President of the Wright Aeronautical Corporation, as their Chairman. The purpose of the conference was to further co-ordination of effort between the Services and the Industry.

This was one of a series of conferences which are the result of a meeting which was held on Dec. 1, when the following representatives of the Industry were appointed :—C. L. Lawrence, Glenn L. Martin, Frank M. Russell, Chance M. Vought, Carl B. Fritsche, Albert P. Loening, and Samuel S. Bradley. Several informal meetings were held during the following week and on Dec. 6, at the second meeting of the Special Committee, the following resolutions were passed :—

Whereas, the President of the United States, in his Message to the Congress transmitting the Budget has said: "Aside from the important factor of training personnel, our National Defense is largely an industrial problem. To-day, the outstanding weakness in the industrial situation as it affects National Defense, is the inadequacy of the facilities to supply air service needs. The airplane industry in this country at the present time is dependent almost entirely upon Government business. To strengthen this industry is to strengthen our National Defense"; and Whereas, the Aircraft Industry, sensing its duty in this regard, purposes fullest co-operation to that end, Now, therefore, be it resolved, that we, the undersigned, representing the Aircraft Industry in the United States of America, proceed immediately to the consideration of what should be done to enable us to ascertain and develop a sounder policy within the Aeronautical Industry, so that closer co-operation between the Government and the Industry may obtain through relations of such character and on such a sound basis as will permit the safe and economical expansion of the industry and the development of military and commercial aeronautics, and thus provide the essential nuclei for production of service types for the National Defense and emergencies.

The Special Committee have now asked the Government to adopt a policy, the outline of which is as follows :—

To encourage initiative by recognising the principle of proprietary rights.

To standardise output in order to stabilise sources of production and secure economy of manufacture.

To adhere to the principle that the Government should not engage in any business which private enterprise can do as well.

The Government should be free to purchase material outside the established units of the industry which has been demonstrated to be better than existing equipment.

To improve research facilities.

To avail itself of the facilities of the industry for overhauling and reconstruction.

To assist the Industry in the procurement of non-commercial supplies.

Mr. Lawrance considers that by the adoption of such a policy the problem of National Air Defence will be solved.

The Secretaries of War and the Navy have received the suggestions sympathetically and have agreed to consider them in detail.

The Rotor Aerofoil.

Report No. A96 of the Rijks-Studiedienst voor de Luchtvaart of Amsterdam, gives particulars of preliminary tests made on an aerofoil-like model with a rotating cylinder fitted to its nose. The section used was one chosen at random, and only tests on lift coefficient were made. These showed that the lift at angles below the stall of the model with the cylinder fixed could be increased by 10 per cent. by rotating the cylinder. The critical angle with the cylinder rotating was increased by nearly 6° and the maximum lift coefficient was raised by over 30 per cent.

As a result, further tests with a section promising better aerodynamic qualities are now in hand and results may be expected to be published in the near future.

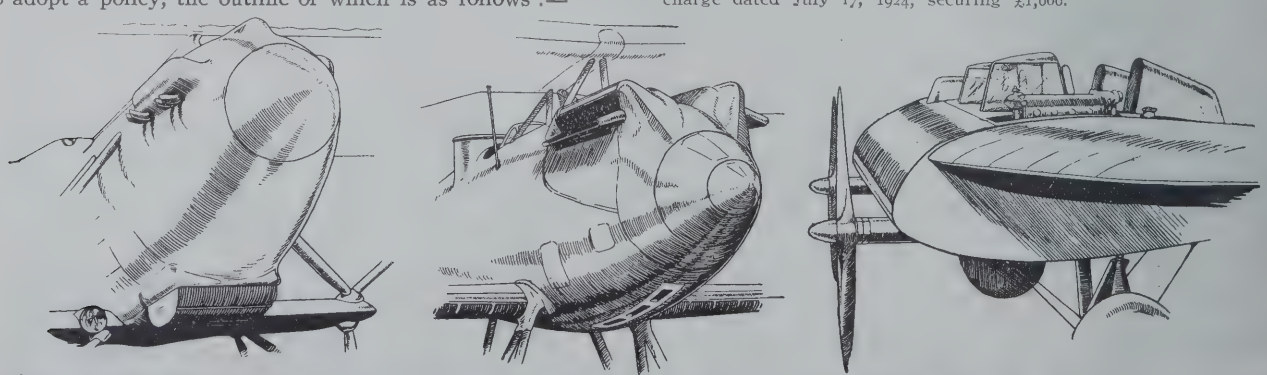
Experience Available.

A pilot of flying boats would like to get in touch with any firm or individual who can make use of his experience. He had 3½ years of constant flying during the War 1914-18, principally on flying boats both big and little, and did a quantity of long-distance sea patrols. He holds a B licence to carry passengers for fee or reward, and is also qualified to fly single-seaters in that he happens to possess two such machines of his own.

One is not at liberty to mention this sportsman's name but he is well and favourably known to official people of high degree who will be pleased to vouch for his capabilities. Incidentally he was responsible for the most amazing landing without accident which has ever been accomplished with a twin-engined flying boat. He is willing to go anywhere and fly anything.

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MORE NOSES FROM THE PARIS SHOW.—Left the Farman A.2 two-seater fighter (450 h.p. Lorraine), centre, the Nieuport 42C.2 two-seater (450 h.p. Hispano), and right, the twin-engined De Monge flying model with Bugatti car engines.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 6; Wednesday, 7; Thursday, 10; Friday, 8; Saturday, 15; Sunday, 4.

IMPERIAL AIRWAYS, LTD.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 40, passengers 58, freight 8 tons.

AIR UNION:

Paris—London: Machines 9, passengers 9, freight 7½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 11.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 40, carrying 58 passengers. Foreign machines: 21, carrying 20 passengers.

Comparative Figures:

For week ending Feb. 15:
Machines, 61; Passengers, 78; Crews, 70; Total personnel, 148.

Corresponding week, 1924:
Machines, 50; Passengers, 86; Crews, 78; Total personnel, 164.

Corresponding week, 1923:
Machines, 26; Passengers, 75; Crews, 49; Total personnel, 124.

Corresponding week, 1922:
Machines, 30; Passengers 57; Crews, 47; Total personnel, 104

Corresponding week, 1921:
Machines 29; Passengers, 32; Crews, 35; Total personnel, 67.

Croydon Notes.

The weather on the whole has not interfered so much as might have been expected with the running of the air lines. In spite of the constant series of gales there were no days on which flying did not take place, but owing to head and tail winds there have been some abnormally slow and quick journeys.

The W.8bs have been missing their ——(Sorry, but the the firm that makes those salts does not advertise.—ED.). They have experienced the same difficulty in leaping into the atmosphere as have other machines.

On Friday Mr. Wilcockson and Mr. Rogers each had a load of bullion, the total value of which was nearly £300,000, packed in iron boxes. The aerodrome was very wet and the South-West wind necessitated the up-hill take-off. Mr. Wilcockson just managed to scrape over the fence and get over the hill, but Mr. Rogers' machine only just got over the fence and sank down the other side. The gold was unloaded and brought back to the Customs House, where it stayed the night, presumably with a strong guard.

Mr. Wilcockson reached Paris safely, but took over four hours to get there. Mr. Rogers took off again on Saturday morning at 11.09 hrs. and reached Paris at 14.06 hrs. The gold is consigned to Basle and it is understood that it is the first batch of a regular consignment. No doubt the cat burglars will all learn to fly and become bird burglars.

It is high time that the Air Ministry took some action with regard to loading of machines when the South-Wester is blowing and the aerodrome is wet. These continual emotioning unstickings cannot be good for the nerves of pilots and if it is the intention to break their nerves the present conditions would seem to be the surest way of doing so.

Mr. Leverton, now recovered from his second bout of 'flu, invariably sends assistants with spades to help his Fokkers take off, as he finds that it is frequently necessary to dig them out of the various morasses on the aerodrome before they are able to start.—G. D.

The Aeronautical Collection at South Kensington.

There has just been issued a supplement to the Aeronautical Section of the catalogue of the collections in the Science Museum at South Kensington, covering the exhibits which have been lent to the Science Museum by the Imperial War Museum, and a number of other recent acquisitions. The collection of Aeronautical exhibits at the Science Museum is one which ought to be visited by everyone interested in the history of Aviation and the catalogue issued in connection therewith should be acquired by every visitor.

The information which they contain concerning individual objects is remarkably complete and accurate, and, containing as they do a number of well-produced illustrations, they will serve as excellent reference books and memory refreshers. In fact one may advise those who are unable to visit the collection itself that their next best course is to purchase the catalogues—which are published by H.M. Stationery Office and may be purchased through any bookseller.

The price of the supplement now issued is 1s. net.

The Institution of Aeronautical Engineers.

The paper by Prof. Coker on Photo-Elastic Methods of Measuring Stress, on Friday, Feb. 6, will be read at the Lecture Room, Engineering Building, University College, Gower Street, W.C.1, at 6.30 p.m., instead of at the Engineers' Club, as previously announced.

The change has been made in order that adequate lantern power shall be available for the display of the series of slides which are to illustrate this paper.

The Ultra-English.

On occasion one has been obliged to remark in the interests of truth that the worst thing about the Americans is that they are so excessively English. A good example of this quality is to be seen in a paragraph, intended to be funny, in a publication called *Slip-Stream*, produced in Dayton, Ohio, apparently in the interests of the civilian employees of McCook Field—which corresponds almost exactly to our Royal Aircraft Establishment at Farnborough. (One specifies the civilian employees because the general tone of the publication is not such as would appeal to the fine product of West Point, whence comes the Regular Officer of the U.S. Army.) The paragraph reads as follows:—

> We like to have our English aeronautical editors come over here to visit us but we are thoroughly disgusted to see 'em go back, stick a monocle in their eye and say we are a lot of ignoramuses with a weakness for hospitality and cheap automobiles. C. G. Grey editor of the "*Aeroplane*," London, who visited this country during the International Air Races last fall went back home and told everybody that wherever he went a delegation of our foremost citizens marched ahead of him with a fanfare of trumpets and shouting Make W'y there. Make W'y, for his Bloomin' H'excellency.
>
> There you have the essential London street-arab, raised a few degrees by cheap education, shouting "Yah! Bloomin' toff!" at the ordinary educated Englishman who has been ordinarily civil in his ignorant presence. It is sad to see that in America, where courtesy is one of the outstanding characteristics of the educated classes, so much of the worst of English boorishness should survive.
>
> Still the people of Dayton are so exactly like those of a manufacturing town in the Midlands of England—as is natural when one considers that the chief industries of the place must have drawn most of the personnel from their parent industries in our Midlands—that one can only expect from Dayton the same mental outlook as one would expect from, say, Coventry: on the principle of the good old proverb, "What can one expect from a pig but a grunt?"
>
> At any rate nobody can say that one ever accused Dayton of having a weakness for hospitality, as compared say with Washington or Baltimore. And as to the delegations of foremost citizens, one certainly saw nobody in Dayton who looked that way.
>
> The truth is that when one came back home one made oneself very unpopular by telling our own people how much we have to learn from America, not only in aircraft design and construction but also in our manner of receiving our relatives from the other side of the Atlantic.
>
> At any rate one can congratulate the editor of *Slip-Stream* on proving that even bad blood is thicker than water.—C. G. G.

Light Aeroplane Clubs.

A Conference of the Light Aeroplane Clubs which have been approved by the Air Ministry was held at the Queen's Hotel, Leeds, on Saturday, Feb. 7, at 5 p.m. The following clubs were represented:—The Royal Aero Club, The Lancashire Aero Club, The Midland Aero Club, The Newcastle-on-Tyne Light Aeroplane Club, and The Yorkshire Aeroplane Club.

The representatives of each club were as follows:—*The Royal Aero Club:* Lt.-Col. M. O. Darby and Mr. H. E. Perrin. *The Lancashire Aero Club:* Messrs. C. J. Wood, V. F. Dyson, J. F. Leeming. *The Midland Aero Club:* Major Gilbert Dennison. *The Newcastle Aeroplane Club:* Messrs. W. B. Ellis, and J. Bell. *The Yorkshire Aeroplane Club:* Professor Brodetsky, Messrs. Stuart A. Hirst, W. L. Oldroyd, Capt. N. Blackburn, Sq. Ldr. R. J. O. Compson, D.S.C., D.F.C. The following members of the Committee of The Yorkshire Aeroplane Club were also present to welcome the delegates:—Messrs. E. T. W. Addyman, G. Ely, T. Hayes, T. Bates, and J. F. Barnes.

The Clubs submitted reports giving details of their progress, which were considered by the meeting to be very satisfactory. Apart from the question of the evolution of a satisfactory and sound financial scheme, it now remains for the production of a machine and suitable engine to enable operations to commence.

Mr. Stuart A. Hirst proposed, "That this Conference of representatives of the London and Provincial Clubs cordially thank Lt.-Col. M. O. Darby and Mr. H. E. Perrin for the efforts they have made to secure co-operation of a satisfactory nature from the Air Ministry and the Treasury, and that they be requested to continue the negotiations with a view to securing sound financial arrangements."

This proposition was carried unanimously. [Presumably Lt.-Col. Darby and Mr. Perrin, although doubtless feeling in their own mind in common with the unanimity of the meeting, did not actually vote on that particular proposal.—ED.]

A vote of thanks to the Chairman concluded the proceedings.

One is indebted for this account of the meeting to Mr. J. F. Barnes, who is Secretary of the Yorkshire Aeroplane Club.

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That Russian Leader.

Patient readers of The Aeroplane, who last week read the Editor's leading article on the above subject, will doubtless be intrigued vastly to know of further developments. The Editor is a great student of the Pip, Squeak and Wilfred pages of the *Daily Mirror*. Therefore he was tremendously excited when a member of the Staff placed before him the cuttings from the daily papers to find among the Russian news the adventures of Popski and Auntie in Russia. For in one of these two characters he sees further potential Russian leaders.

The Editor is not so much concerned with the future of Popski as he is with that of Auntie. Popski, he points out, is obviously of Mongoloid, Japhetic, or "whatever you like to call it" type (you will note that whenever the Editor is not quite sure, he always adds that non-commital phrase, "Whatever you like to call it"). He is a square-head and though he has temporarily acquired a certain influence over Auntie he, in common with the other Slavonic people, has no inherent powers of command. Moreover, the Japhetic, Mongoloid or "whatever you will" people, will certainly not be led by a Muscovite canine, a mere Mongoloid mongrel.

With Auntie, however, the case is different. Like Napoleon, who sprang from a different stock from the French, Auntie has no Muscovite stock in her ancestry. Like Napoleon, islands constantly loom in her horoscope. She probably sprang from the same stock as did Joan of Arc, who provides a valuable precedent for a woman leader, and like Joan she has that fanatical fire always evident in a great leader.

She is ruthless and resourceful as witness her attack on and scattering of a band of wolves by laying about her armed with nothing but her inseparable and inevitable umbrella and there are numerous cases of her immense cunning. And her strategy and tactics are sometimes amazing. Furthermore, it must not be forgotten that another great commander, the late Duke of Cambridge, who was C.-in-C. of the British Army in the reign of Queen Victoria, always came on parade armed with an umbrella.

There are in Auntie all the components of a Russian Napoleon and a Russian Joan of Arc (by permission of Mr. G. B. Shaw). No harm and a great deal of good can be done by watching Auntie.—G. D.

Petrol Consumption.

The following note from Mr. H. T. Vane, of the Napier Company, will be found interesting:—

"In your issue of Feb. 4 a 'Naval Engineer' wrote on 'Slogans, Carburettors and Experts' and in his letter he referred to the fact of engines being advertised as having a consumption of .55 pints per b.h.p. hour at or about full power, and wanted to know what the consumption of such engines would be when slowed down.

"So far as the Napier Lion engine is concerned the best answer that one can give to 'Naval Engineer' is that under ordinary Civil Aviation conditions its consumption works out at .6 pints per b.h.p. hour. 'Naval Engineer' will therefore see in *actual service* the consumption of the Napier engine is approximately the same as is obtained on the Government type test."

Notice to Ground Engineers.

"Petroflex" Tubing.—The use of internally unarmoured "Petroflex" tubing in aircraft shall be discontinued forthwith.

No certificate of airworthiness will be issued or renewed in respect of any aircraft on which the above instruction has not been carried into effect.

By Command of the Air Council,
W. F. Nicholson.

Air Ministry, London, W.C.2, 14th February, 1925.

The English Electric Company.

The Aircraft Department of the English Electric Company Ltd. held its first annual Staff Dinner on Feb. 6 at Preston.

Amongst those present were Mr. W. O. Manning, Chief Designer, Mr. E. Gibson Knight, and members of the Air Ministry and R.A.F.

An interesting speech was made by Mr. Gibson Knight, who related the early history of the English Electric Co.'s aircraft activities. He said that the first machine to be built by the Company was one built at Coventry Works in 1911 for Army trials, after which B.E.s, Sopwith Snipe and other types were built at the same works. At the beginning of the War the Bradford and Preston Works took up the construction of aircraft, a Design and Research Department being opened at Bradford under the supervision of Mr. Manning. The activities of the Department resulted in the production of the P.5 Cork Flying Boats, the first of which passed its tests in 1918. The Preston Works were engaged chiefly on F.3 and F.5 type boats during the War, but it is interesting to note that the 2,400 h.p. Atalanta was built there.

About three years ago the whole of the aircraft business was transferred to the Preston Works, and since then several new designs have been brought into being, chief amongst which is the P.5 Kingston, which is already acknowledged as being in the front rank of its type. Another interesting machine produced at Preston was the Wren, a light aeroplane equipped with a 3 h.p. A.B.C. engine, which, when compared with the 2,400 h.p. Atalanta produced at the same works, and coupled with the fact that, all told, the Company have produced approximately 1,500 machines, conveys some idea of the experience behind the aircraft department.

Mr. Manning, in proposing the toast of "Our Guests," remarked upon the constant necessity of improving the qualities of the machines turned out, and said that it was only with the hearty co-operation of the R.A.F. that this could be done.

A Westland Affair.

The Annual Dinner of the Staff of Petters, Ltd., was held on Jan. 31 at the Mermaid Hotel, Yeovil. Sir Ernest Petter, who has



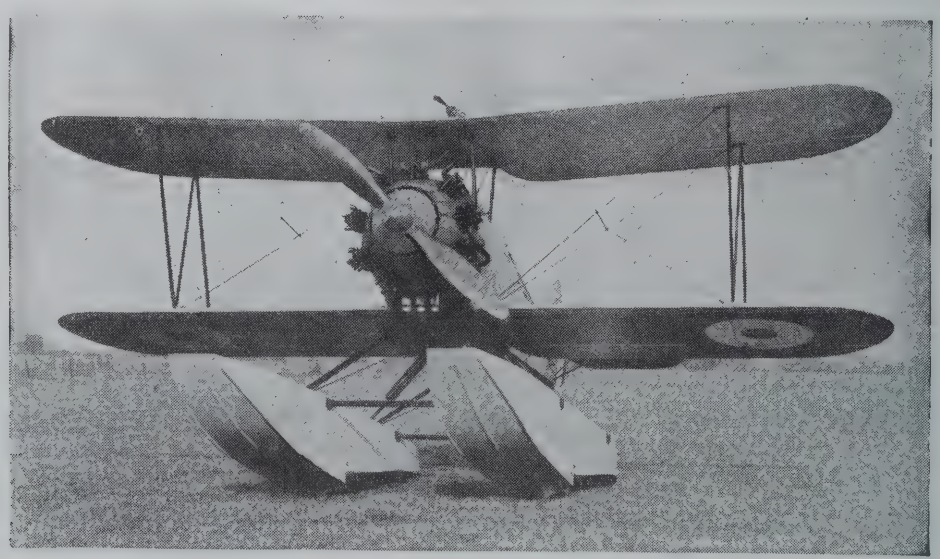
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No. of Cyls.	Cooling.	Normal H.P.	H.P. at 1,800 r.p.m.	H.P. at 1,900 r.p.m.
8	Air.	120 at 1,500 r.p.m.	128.	140.
Propeller Revs. Half Engine Speed.	Running weight without fuel 452 lbs.	Running weight per H.P. 3.53 lbs.	Petrol consumption per b.h.p. hour. .62 pts.	Oil consumption per b.h.p. hour. 044 pts.

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recently received the honour of Knighthood for work in connection with the British Empire Exhibition, was in the Chair and was supported by his fellow-Directors, Mr. J. Vincent, J. P., Mr. P. W. Petter, J.P., and Mr. R. A. Bruce, Mr. G. B. Petter, Capt. R. C. Petter and Mr. R. J. Norton. Among those present were the Mayor of Yeovil, representatives of the Air Ministry and members of the staff at branch offices.

Mr. Bruce, the Managing Director of the Aircraft Works, proposed the toast of "The Chairman," and congratulated Sir Ernest Petter on his Knighthood.

Various presentations were then made. Sir Ernest Petter expressed his thanks for the gifts and in the course of a short speech said that he had just returned from his first trip to Canada and that he hoped to visit the whole Empire before he died.

Mr. G. B. Petter proposed the toast of "The Mayor and Corporation of Yeovil," and Mr. R. J. Norton proposed "The Visitors."

Mortgages and Charges.

AIRCRAFT DISPOSAL COMPANY LTD.—Prior lien debenture dated Jan. 16, 1925, to secure £133,434 7s. 10d., constituting a floating charge on the Company's undertaking and property, present and future, including uncalled capital but ranking in priority to the outstanding mortgage debentures.

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PERSONAL NOTICES.

DEATHS.

DAY.—On July 25, 1924, on reconnaissance duty in Iraq, Flt. Lt. William Conway Day, M.C., No. 84 (Bombing) Sqdn., R.A.F.

STEWART.—On July 25, 1924, on reconnaissance duty in Iraq, Flg. Off. Donald Ramsay Stewart, No. 84 (Bombing) Sqdn., R.A.F.

Flt. Lt. Day and Flg. Off. Stewart were reported missing in July last, having failed to return from a reconnaissance flight over the desert south of Basrah. Their death was presumed by the Air Ministry in December. It is now reported that the remains of both these officers have been found and buried in the Basrah War Cemetery.

MARRIAGES.

BRETT—DAVIDSON.—On Feb. 11, at Barley Parish Church, Herts, Flg. Off. W. J. Brett, R.A.F., eldest son of Capt. Brett, Carlisle, to Rosamond Ella, second daughter of Rear-Admiral and Mrs. A. P. Davidson, of Barley, Herts.

PIPON—DE KRYPOTINE.—On Feb. 11, in Brussels, Flt. Lt. T. Pipon, D.S.O., R.A.F., only son of Mr. and Mrs. A. T. M. Pipon, of Beechcroft, Goring-on-Thames, Oxon, to Olga de Selivanoff, widow of Lt. de Krypotine, of the Russian Imperial Guard.

BIRTHS.

CARTWRIGHT.—On Feb. 5, at the Bungalow, Oxford Road, Abingdon, Berks, to Muriel, wife of Flg. Off. Harry Cartwright, R.A.F.—a daughter.

MALET.—On Feb. 14, at a nursing home, Petersfield, to Olga, wife of Flt. Lt. H. G. R. Malet, R.A.F.—a daughter.

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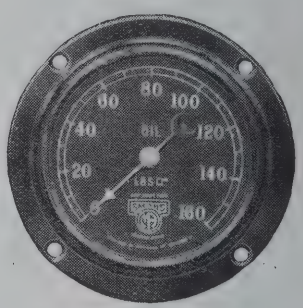


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INCORPORATING AERONAUTICAL ENGINEERING

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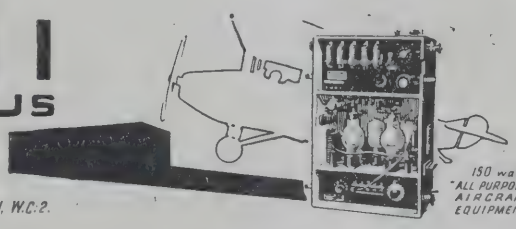
THE NIGHT MAIL:—A photograph of a Fokker F.III (Siddeley Puma) having made a night landing on the Staaken Aerodrome, Berlin.

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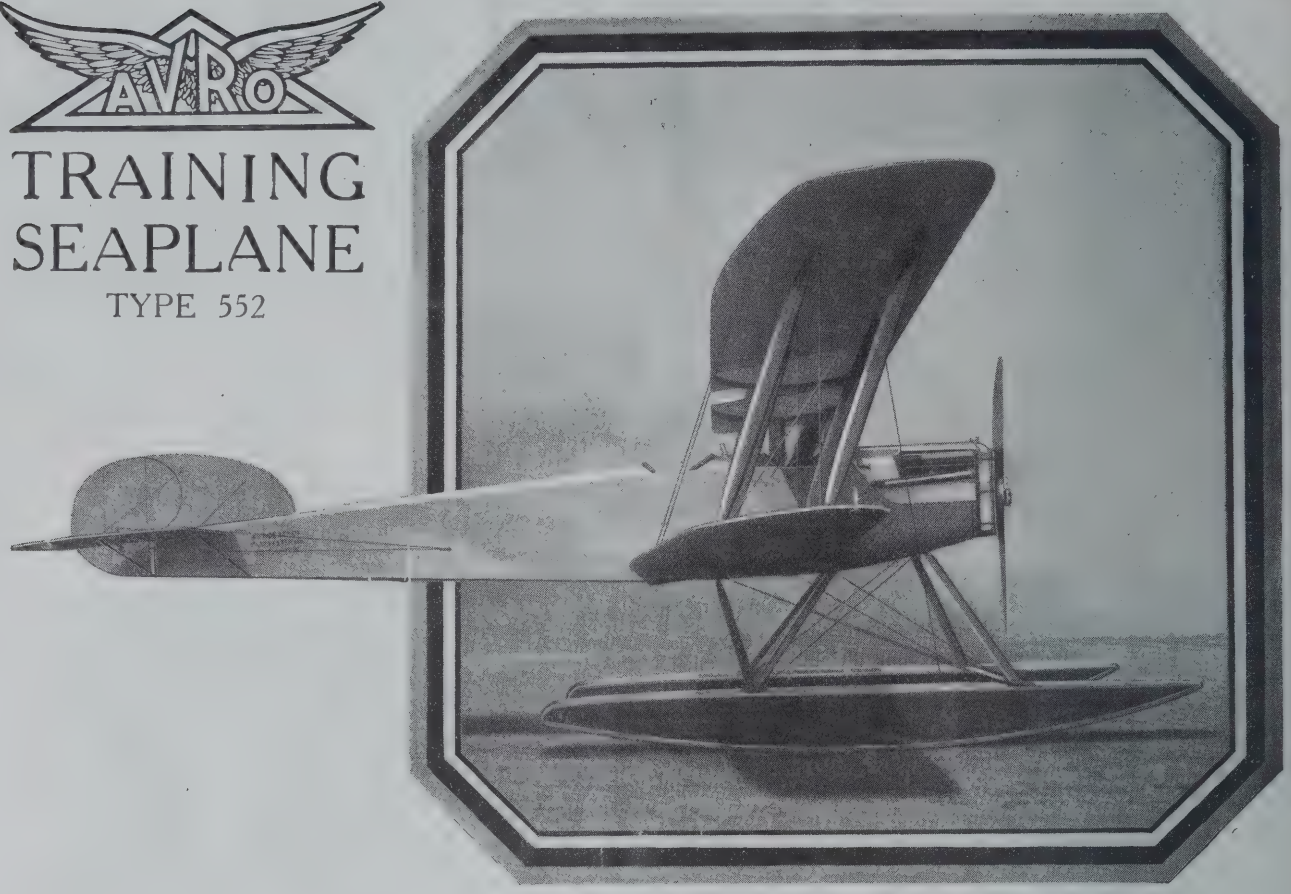
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ON AIR AGITATION IN AMERICA.

During the past few weeks a Select Committee on Aviation of the House of Representatives at Washington, more commonly known as Congress, has been investigating the state of American Air Power in consequence of the numerous articles which have appeared in all kinds of papers and magazines all over the States and also because of the various questions and statements which have been made in Congress and in the Senate exposing the unpreparedness of the States in case of war.

The central figure in all this agitation is Brigadier General William Mitchell, Assistant Chief of the U.S. Army Air Service. General Mitchell is playing a very bold hand in that besides criticising his superior officers before the Select Committee he has been attacking the whole system of the American Flying Services in a series of articles in the Philadelphia *Saturday Evening Post*.

The whole business is strongly reminiscent of our own Air Inquiry agitation in the early months of 1916. In consequence of the attacks by Mr. Pemberton Billing, Lord Montagu of Beaulieu, Mr. Joynson Hicks and others, the question of the mal-administration and the gross mismanagement of the Royal Flying Corps was thrashed out with the result that an Air Board was formed to co-ordinate the supply of equipment for the two Services. And from this Board ultimately arose the Air Ministry and the Royal Air Force as it is to-day.

The underlying aim of the agitation in the United States, as may be judged from Senator Currie's Bill to which reference was made in a recent issue of THE AEROPLANE, is to form a separate Air Service similar to our Royal Air Force.

THE PRESENT SITUATION.

The Times of Feb. 9 summed up the situation adequately in the following paragraphs :—

There have been countless investigations, recommendations and reports on the Air Services in the past few years, and whenever they have had any semblance of impartiality they have led to the conviction that aviation is of no less importance than the Army or the Navy. There have been warnings from staff officers charged with the mobilisation of industry in the event of war that eight months must elapse before aircraft could be delivered in sufficient quantities. But when President Coolidge recently instructed Mr. Wilbur, the Secretary of the Navy, to appoint a board to consider the relative merits of air and naval craft none but non-flying officers were appointed to make the inquiry, and when the super-Dreadnought Washington was sunk for test purposes recently it became very clear that the preoccupation of those in charge of the experiment was rather to establish the superiority of naval guns than impartially to determine the relative value of guns and bombs. The gallant "Billy" Mitchell, as he is known, is saying all this, and more, in season and out of season, and official thunder is rolling about his head.

Figures were produced recently before the Congressional committee showing that in the five years 1920 to 1924 the War, Navy and Post Office Departments had spent $433,383,237 (over £86,000,000) on aviation. "But," said one Representative, "here we are with no commercial flying except the air mail and with but a fragment of an aircraft industry; yet we are confronted with the certainty that aircraft in time of peace and air power in time of war are to be the great potential factors in our existence in the near future."

The immediate question seems to be whether General Mitchell shall be relieved of his post and assigned to some non-flying service—in which case he would probably resign—or whether he is to be allowed to continue what the Secretary of War angrily calls his "supercilious" criticism. It would be easier to answer this if General Mitchell did not have powerful supporters. Congress believes aviation affords a cheaper and probably more effective method of defence than battleships, and there is ground for suspicion that the President does too. The issue will have to be met soon.

The Washington correspondent of *The Morning Post*, who is always very well-informed, made in that paper on Feb. 14 the following statement :—

Brigadier-General William Mitchell, Assistant Chief of the Army Air Force, who commanded the American Air Force in France, said that the American Army was organised for defeat, and would stand no chance against any third-rate Power in the Pacific properly equipped with sea-going aircraft. Brigadier-General Mitchell had previously told the Committee that the Navy had hampered the Army Air Force in bombing tests on the *Ostfriesland*, and imposed conditions which endangered the lives of his men, while the Navy counter-alleged that Brigadier-General Mitchell violated orders.

On Feb. 17 the Committee held a secret session. The Washington correspondent of *The Times*, the most reliable possible authority in his own sphere, published the following statement in his paper on Feb. 19 :—

The testimony of Admiral Jones, of the General Naval Board, and of General Hines, Chief of the Army Staff, is reported greatly to have impressed the Committee, causing its members to view more sympathetically General Mitchell's criticisms. It is now suggested that Congress be asked to authorise a thorough investigation of what one Committee member called an "amazing situation of defencelessness." It is understood that figures were presented revealing grave deficiencies in aeroplanes considered as the minimum essential for defending the American coasts, Panama, Hawaii, and the Philippines.

On the top of all this discussion comes the report of the special board appointed by Mr. Wilbur, Secretary of the Navy, at the President's request last autumn. Before giving attention to the Navy Estimates Mr. Coolidge desired to have available a thoroughly digested programme wherein all the factors affecting sea power were given careful consideration. Therefore he requested the Secretary of the Navy to prepare a report showing how recent aviation progress affected policy regarding the upkeep and development of all arms of the Service—submarines, surface ships, and aircraft. Mr. Wilbur appointed a board consisting of seven admirals and the Marine Corps commandant. Their report is long and very comprehensive.

THE REPORT.

In summarised conclusions they give their emphatic opinion that the battleship is still "the element of ultimate force in a fleet, all other elements being contributory to the fulfilment of its function as the final arbiter at sea. Threats to its supremacy appear at times, but only result in modifications of its design or method of employment. Aviation will undoubtedly increasingly influence naval warfare but will not assume paramount importance. Aircraft cannot occupy territory, cannot control the sea, and must have a base controlled by its own military or naval forces. Within 250 miles from their base or carriers aeroplanes menace ships, land forces, cities, and industries, owing to their ability to carry bombs weighing 2,000 to 4,000 pounds, but anti-aircraft defence must meet that menace."

For America they contend that the aeroplane has secondary importance, for, unlike European countries, the United States has no potential hostile neighbours, and aeroplanes cannot cross the Atlantic or Pacific for unaided offences. The Board derisively opposes the establishment of a separate aviation department. For the United States aircraft are auxiliaries—scouts, spotters, raiders, gas carriers, and coast defenders—subordinate to the mainland and sea forces. The weight of aeronautical as well as naval evidence was agreed on the undesirability of making an auxiliary force into an independent service, though the Board recommends increased appropriations for aerial development, and also advocates that every young naval officer should learn aviation just as he takes submarine duty.

It is important to remember that the Board, composed entirely of naval officers imbued with the deep sea tradition, naturally takes a conservative view of the aeroplane, which they contend "is like a ram, torpedo, or submarine, a weapon of opportunity, not a final decisive factor." Experts who appeared before them are quoted as anticipating not more than a 30 per cent. increase in aeroplanes. Present maximum performance and experiments in sinking the Washington are cited as proving that the modern battleship, though not invulnerable, still possesses very efficient structural protection. "After suffering the explosion of three bombs of the largest size detonated under water at the most effective depths, in addition to two full-sized torpedo explosions directly against the hull, with no leaks repaired, no pumps going, the Washington remained afloat four days and was finally sunk by 14 hits from 14in. shell in two hours and three-quarters." The Board holds that the most important weapon is still the gun which, firing effectively at ranges of about 25,000 yards, will penetrate the strongest armour afloat and will hit more frequently than aerial bombs dropped from a height of 1,000 ft., the minimum height from which it is anticipated aeroplanes are normally able to deliver an attack, in view of the expected improvement in anti-aircraft gunnery.

THE MEN TO BACK.

Judging by the habit which History has of repeating itself it seems fair to assume from the foregoing facts that sooner or later the United States will have a separate Air Service with a Bureau of Aeronautics of its own, parallel to the Army Bureau and the Navy Bureau. In such an event obviously the proper person to put in charge of the Bureau of Aeronautics would be Colonel Paul Henderson, the Assistant Postmaster-General, who has been responsible for the outstanding success of the U.S. trans-Continental Air Mail.

In the course of the past ten or twelve years one has met a variety of statesmen and politicians, big and little, and of several nations. And among them all Paul Henderson stands out with perhaps three or four others as being a really big man under whom it would be a privilege and a pleasure to

serve in any capacity. He has vision and foresight, which are after all the gifts possessed by many well-meaning but futile people, but he has also a strong personality which enables him to put his visions into practice.

Also in the event of an Air Service coming into being it is obvious that General Mitchell must be the fighting head of it. The fact that he is up against the other Services and against a strong political clique need not dishearten those who believe in him. There was a time when the present Chief of our Air Staff, having come in conflict with a political personage, was regarded as down and out by those who did not know either his methods or his ability.

Whatever may happen in the immediate future to General Mitchell as the result of the machinations of his enemies one is prepared to back him to come out on top at the finish. He may even be disciplined and pushed into the background or out of the Service in the immediate future. But when war comes to the United States William Mitchell will be the man who under Providence will lead the American Air Force to ultimate victory.—C. G. G.

ON A VISIT TO AMERICA.—VIII.

THE U.S. FLYING SERVICES.

[*The following notes, written some two months ago, will be found of particular interest in connection with the foregoing historical records.*—C. G. G.]

In the U.S. Army Air Service affairs are complicated by the fact that a very large number of the officers were civilians only a few years ago, and only came into the Service during the War between 1916 and 1918, though several served in the British Flying Services before the States joined in the fight, having entered as what they themselves call "near Canadians."

These men have never been to West Point and they have none of the traditions (or as they might call them, the superstitions) of the Regular soldier.

As in our Royal Air Force, some of these civilians have become excellent officers, able to handle and lead men, as well as being good on the technical side and also capable pilots. Some are merely good pilots, incapable of moral leadership or organisation, but so good as fighting men or as test pilots or as formation leaders that the Service cannot afford to get rid of them. But all are deadly keen on the Air Service as such and are full out for progress in the science of Air War.

Now, in the States the Army Air Service is just a branch of the Army. The personnel are in the Army List along with the Artillery, Cavalry, Infantry and Supply Services. Consequently there is no advantage in the way of promotion or pay in being an aviator.

It is, of course, possible to argue that it is quite right that the pay should be the same. The Air Service may regard itself as being more or less continually on active service in the war with the air and therefore liable to greater risks than the rest of the Army. But after all, if a man engages to do certain work at certain pay, knowing the risks, he must abide by his bargain. Yet, the Navy gets "hard lying allowances" for specially uncomfortable jobs and the Army draws "field allowances" when on duties which are not very dangerous. So it is not unreasonable to plead that flying pay should be allowed when an officer or man is definitely flying.

But the real grievance of the U.S. Army Air Service is that when a flying officer is killed his place in the seniority list is not filled by another flying officer but by the next in order in the Army List. Thus if a captain be killed while flying the whole list of lieutenants goes up one, and the officer who becomes a captain because of the crash may be the occupant of an office chair in a supply department.

The "Third Service" Argument.

The Air Service feels that in all its doings it is constantly subordinated to the Army. It is regarded merely as an auxiliary or accessory to Army strategy and tactics. It feels that so long as it is a part of the Army it will never be allowed to develop the science of Air War or to conduct its own operations.

Consequently the U.S. Army Air Service is almost unanimous in desiring to become a Third Service, exactly like our Royal Air Force, with its own Bureau in Washington and its own Secretary for Air, who should be the equal of the Secretaries for War and for the Navy.

There are some few, chiefly old West Pointers, who would like a compromise by which the Air Service would remain part of the Army but would have its own gradation list for purposes of promotion and would have its own rate of pay. It strikes one that this is a more selfish point of view than the other, for though it would mean personal advantages in the way of pay and promotion it would still leave the Air Service tied to the Army for operations, both strategic and tactical, except for the minor tactics of air fighting.

For example, if in the war with Japan the Army decided to operate solely in recapturing the Philippines the Air Service would be employed entirely in doing the Army's work there and could never develop the great strategic schemes which would certainly be produced by an able general whose mind was concentrated on an air war in which Army troops would be employed merely as a holding force to guard aerodromes and to keep the territory won by the Air Service.

Subordination or Co-operation.

It is as true to-day as ever it was that the only thing that wins a war and keeps it won is the infantryman on his own flat feet in an enemy's country. But in the war of the future, and more especially in a war fought all over a conglomeration of islands covering some thousands of miles in every direction, the infantryman and the gunner can only get his feet into enemy territory when the Air Service has cleared the road for him. Therefore it seems evident that the Air Service of any nation must be independent if it is to achieve its best results.

The three Services must act together in the closest alliance. And it may be argued that the Navy and the Air Service are only in the War to clear the way for the Army and that therefore the Army is the more important of the three. But it will be in future wars as absurd to tie air operations to the Army or Navy as it would have been in the past to subordinate the Army's operations to the Navy's curious ideas of strategy.

Consequently it is inevitable that in the end the United States must have their own Air Service. The only question is how soon?

Some expect it within the next few months, thanks to the conversion of President Coolidge and most of the important men in American Politics to faith in Air Power. Others do not see that the States are likely to have an independent Air Service till the wrong use of aircraft by the Army and Navy in the War with Japan forces an Air Service into being as our Royal Air Force was born in 1917-18. But all in the States who have thought deeply and intelligently about Air Power are convinced that the Independent Air Service must come sooner or later and must be acknowledged as the First Line, just as ours has been in the past two or three years.

The U.S. Navy's Air Service.

The position of the U.S. Naval Air Service is rather different from that of the Army. And it differs very considerably from the position of our own Royal Naval Air Service before it was absorbed into the R.A.F.

In the first place the U.S.N. Air Service is officered almost entirely by graduates of Annapolis. This has two results. Firstly the Naval aviator has ingrained in him a spirit of loyalty to the Navy. And secondly, the Air Service being composed of regular Naval Officers, the Navy in the ships cannot look with contempt on their aviators as our regular Navy used to look down on the weird collection of scallawags which constituted the old R.N.A.S. or as the Naval Officer looks down on R.A.F. personnel to-day as beings from an alien Service.

Also, the U.S. Naval aviators have to do their tour of service in ships after being in the Air Service. If one's memory is correct, appointments to the Air Service are only for two years—except in the cases of certain specialists—after which the aviators return to ordinary Naval duties, just as do the officers of our Submarine Service.

Naturally that makes for smoother working between the air folk and the rest of the Navy than ever was the custom in our Navy. But the more convinced aviators of the U.S. Navy feel none the less that their hands are tied by the hard-baked senior Naval Officers. In their moments of relaxation one hears U.S. Naval aviators moaning about obsolete Admirals, and about officials who have been dead for years without knowing it, and so forth and so on, just as one hears similar plaints from the sea-going branch of the R.A.F. who have been condemned to the Fleet Air Arm.

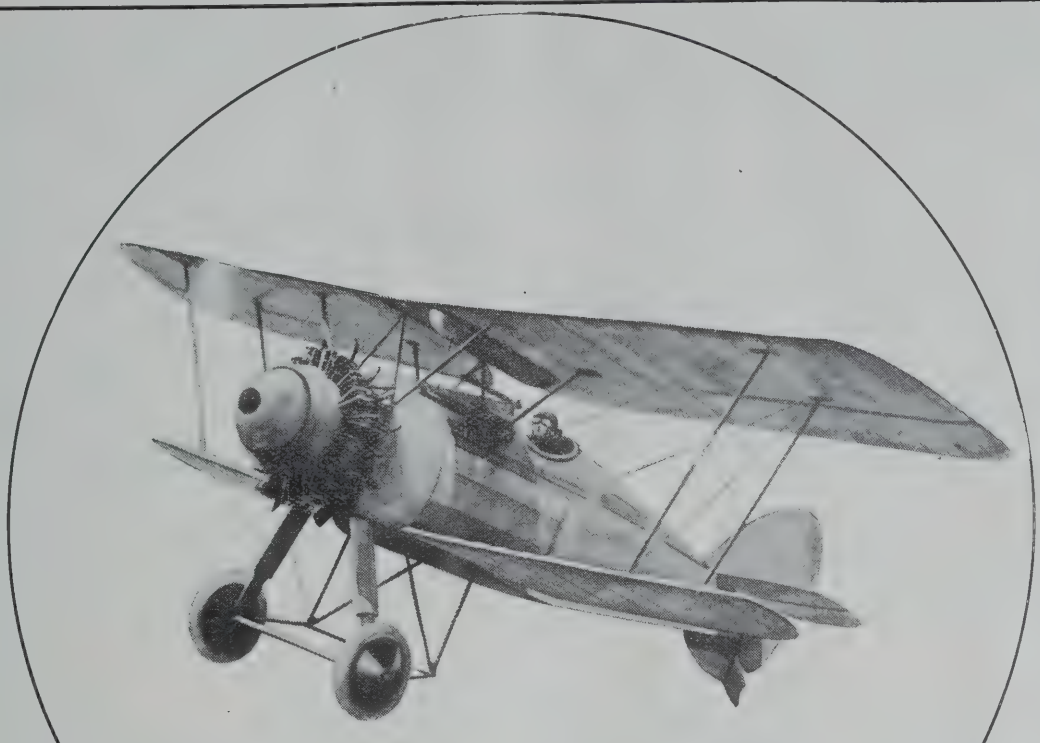
The Political Sections.

Briefly, the U.S. Naval Air Service may be divided into three sections.—(A) Those who are of the Navy Naval and who are content to be always Naval Officers working in an auxiliary service of the Fleet. (B) Those who would like to see the Air Service made into a separate branch like the Marine Corps, with their own gradation list and special war-risk pay. And (C) Those who would like to be in a Third Service, the Independent Air Service made by amalgamating the Army and Navy Air Services exactly like our R.A.F.

But this third section always has in its heart the fear of Army influences dominating the new Service, as Army influences do in fact dominate the R.A.F., very much for its own good. This fear is accentuated by the fact, already mentioned, that the Naval aviators are regular officers with the Annapolis tradition.

A Matter of Personality.

Feeling is still further influenced by the fact that the most



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active brain and the most forceful personality in American Service Aviation happens to be an officer who, though a professional soldier, is not of West Point and is therefore untrammelled by the traditions of either the Army or Navy Academies. Those of academic mind in both Air Services are continually troubled by the thought that if an Independent Air Service ever comes into being this officer may be made its Chief and that he may do something (they have no notion of what) which will revolutionise everything and make their own positions unpleasant.

Time alone will show what will happen, but one has personally a feeling that the one person who could build up an Air Service worthy of the United States and instil into it the spirit of the men who conquered a Continent and made it a nation is one who combines the ruthlessness and fervour of a Cromwell with the dash of a d'Artagnan and the air of a Cyrano de Bergerac, plus that care for details of supply such as was the mark alike of Moses and Sir John Cowans. And it so happens that American Aviation has a man who is very like a mixture of the lot.

Either he will make an American Air Service worthy of the nation or he will break himself. But if he is broken it will be by a man a good deal bigger than anybody in sight in the United States at the moment. One names no names, but those who know do know. And it will be interesting to wait and see.

A Personal Opinion.

So far as U.S. Naval Aviation is concerned one believes that if the Air Service remains as it is it will never get anywhere in particular. The officers will go back to ships and will be promoted in due course and some of them will some day become Admirals, perhaps a little less bone-headed than their predecessors, but still not possessed entirely by the idea of Air War.

If the Air Service becomes a kind of Marine Corps there will be immediate minor advantages to every individual but in the end the disadvantages will outweigh them. No Air Corps officer will ever command a fleet nor an army nor an independent air force. The personnel, like the Marines, will be *in* the Navy but not *of* it. And that will be that.

Therefore it seems that from the point of view of promoting efficiency in the air and also because of the greater opportunity which would be open to the ambitious, the Third Service is the more tempting proposition. Going as a wholehogger for an Independent Air Service means taking a risk. But every aviator is accustomed to risks. And no ambitious man ever got anywhere without taking risks. So on the whole the risks seem worth taking.

Anyhow, the sooner the question is settled the better it will be for the U.S. Air Service in the war. We in England swopped horses crossing the river—as one of our Chiefs put it—and changed over to the R.A.F. when the War 1914-18 was in full blast. The result was a mess which the Air Staff is still busy cleaning up.

If the American Government sets about the same job in the calm and contemplative mind which is possible in time of Peace, and if it studies our difficulties while it is making the change, the American Nation will have a made and trained and organised Air Service ready to tackle Japanese aggression with the certainty of ultimate success without those "regrettable incidents" which are such prominent features of all our own campaigns before we muddle through to victory after having lost every battle except the last.—C. G. G.

ON THE AIR ESTIMATES.

On Feb. 19 the Secretary of State for Air issued the Air Estimates for the year 1925-26. In his introductory Memorandum Sir Samuel Hoare points out that the net amount of expenditure under Air Votes which Parliament is asked to authorise is £15,513,000. In addition to this there is a sum of £3,116,700 to come from the Colonial Office under the Middle East Vote. This amount is made up of £2,744,100 from Iraq and £372,600 from Palestine and Transjordania. There is also a Vote of £1,320,000 to come from the Admiralty under a Vote for the Fleet Air Arm.

These sums added to other repayments and appropriations in aid produce the satisfactory gross figure of £21,319,300. This compares with £19,742,000 in the gross Estimates for 1924.

The Introductory Memorandum.

Discussing the strength and distribution of the Air Force, the Secretary of State says :—

> The present strength of the Air Force, apart from training units and establishments, is the equivalent of 54 squadrons. 43-2/3 squadrons are organised as such, and there are 21 flights of an average strength of 6 machines (half the strength of a normal squadron) provided for the Fleet Air Arm or for operation from coastal bases. Of the 43-2/3 squadrons, 25-1/3 are stationed at home, 8 in Iraq, 6 in India and 4-1/3 in Egypt and Palestine.
>
> The number of completely formed Regular Squadrons for Home Defence is 18. During 1925-26 the number of squadrons formed will be: Regular 2, Special Reserve 1, Auxiliary Air Force 4. The Special Reserve Squadrons will be manned as regards one-third by regular officers and airmen, and as regards two-thirds by officers and men of the Special Reserve raised under the Act passed last year. The Auxiliary Air Force Squadrons will be manned (except for a small permanent staff) by officers and men raised on a territorial basis under the same Act.
>
> The estimates reflect the arrangements recently agreed to respecting the Fleet Air Arm; a proportion of its officers will be Naval officers attached to the Royal Air Force. All air observation duties in the Fleet Air Arm will be performed by Naval officers who will not be so attached, and Naval ratings will be substituted for airmen in certain trades in units provided for embarkation in aircraft carriers.
>
> The strength of the Fleet Air Arm will be increased towards the end of the year by four additional flights to meet naval requirements.
>
> Four squadrons will continue to be provided at home specifically to meet the requirements of the Army, the provision for Army co-operation in overseas theatres also remaining unchanged.
>
> As regards Iraq the number of air squadrons remains at 8, and it is expected that this number will be maintained at least until the northern frontier is sufficiently stabilised. It is of course the desire and intention of H.M. Government to reduce the Imperial garrison in that country as rapidly as circumstances allow, and a decision has lately been taken to withdraw the Indian Pack Battery during the present trooping season and to reduce the number of Armoured Car Companies from four to three.
>
> In Egypt and Palestine the equivalent of four squadrons is stationed, one flight being held at Amman in Transjordan, the starting point of the desert air route. Economies have recently been effected by reducing the establishment of the Palestine Squadron by one flight. Provision is also made for the continuance of a flight of 3 machines at Aden.

Vote A, which affects personnel, authorises an increase of 1,000 men which necessitates an increase in pay of £471,000 and a corresponding increase in maintenance.

Sir Samuel Hoare points out that although Vote 3 (Technical Equipment, Experiment and Research) shows a net reduction of £400,000 allowance has to be made for the grant from the Navy Vote in respect of the Fleet Air Arm and there is therefore a net increase of £763,000. On this point Sir Samuel Hoare says :—

> This increase is mainly due to the new squadrons being formed for Home Defence and to the larger orders being given for aircraft of modern types. It is to be remembered that, as with all types of fighting equipment, there is a marked tendency for aircraft to advance in power and complexity and consequently also in cost.

Provision for research and development is slightly increased owing to the more complete recognition of the scope of pure research and it is hoped to free the technical administration from responsibility for theoretical investigation.

On the subject of the much-discussed establishment at Farnborough the Memorandum says :—

> The work of the Royal Aircraft Establishment at Farnborough will be continued and developed on the same lines as hitherto. It is the considered policy of the Air Ministry to reserve this Establishment for experiment and research, and not to employ it on the normal work of production for the Air Force.

As to airships, the Memorandum says :—

> The Royal Airship Works at Cardington and the Airship Station at Pulham were re-opened in July last. In order to obtain reliable data as to the stresses and aerodynamic pressures which are imposed upon the structure of an airship in flight, the R.33 (a sister ship of the R.34 which flew the Atlantic in 1919) has been reconditioned and fitted with special recording instruments and will shortly carry out a series of experimental flights for this purpose. The R.36 is now being reconditioned at Pulham for an experimental flight to Egypt, after having been tried out at the Cardington mast. In addition, model and full scale research and experiment has been proceeding at Cardington and at the National Physical Laboratory. Exhaustive trials of experimental girders are also now in progress.
>
> The shed at Cardington is in process of being enlarged with a view to the construction of the new Air Ministry ship. The necessary mooring masts are being constructed in order that the new airships may be able to moor at Cardington and two stations overseas, while the existing mast at Pulham is being reconditioned for the purposes of the aerodynamic trials with R.33. The new Air Ministry ship will not be actually laid down until the girder trials referred to above are completed.
>
> An initial payment of £150,000 has been made to the Airship Guarantee Company on account of the airship they have contracted to build, and the estimate contains provision for further progress payments to the company during the coming year. The total provision for airships under Vote 3 amounts to £500,000.

The Vote for Works, Buildings and Lands shows a net increase of £445,000 which had been made necessary to provide accommodation for the new Home Defence Air Force. The remark is made that on account of difficulties in connection with the supply of skilled labour the building programme is proceeding slowly. This section of the Memorandum also foreshadows the expenditure of considerable sums in providing adequate buildings in Egypt. This will be good news both to the R.A.F. personnel who may be ordered there and also to those who are doubtful whether we intend to maintain our hold on the Suez Canal area.

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BRITISH *BUILT*

The Vote for Civil Aviation shows the slight increase of £2,000 which is inconsiderable. There is also a slightly increased Vote for Meteorology, an increase which is deserved considering the comparative accuracy of the work of that department during the past year.

The Air Ministry itself is given an increase of £41,000 of which rather more than £13,000 is due to an increase in the staff of the Works Directorate in connection with the building programme of the Home Defence scheme.

Finally the salary of the Secretary of State for Air himself is increased from £3,000 per annum to £5,000 per annum. Certainly nobody will grudge Sir Samuel Hoare the odd £2,000. Holding his office will probably cost him considerably more than that.

What the increase really means is that the Secretary of State for Air is now paid on a level with His Majesty's other principal Secretaries of States as is right and proper considering that he now has a seat in the Cabinet on equal terms with the First Lord of the Admiralty and Secretary of State for War.

As one of the minor humours of Government procedure it is of interest to note that Sir Philip Sassoon, the Parliamentary Under-Secretary of State for Air, draws a salary of £1,500 per annum, a sum which to one of his family can only be described by the French word *dérisoire*.

Altogether the Air Estimates may be regarded as quite satisfactory from the general point of view of air defence. After all a net increase of approximately £2,000,000 (slightly less than the amount foreshadowed in The Aeroplane a fortnight ago) is quite satisfactory for a young and growing Service. And it will probably be found when the Air Estimates come before the House of Commons that everybody is agreed that this is to be regarded only as a step towards very much bigger Estimates in the future.

Impossible Ambitions.

Certain newspapers in commenting on the Air Estimates seem to be disappointed that no greater progress is shown in the increase of the Air Force. *The Times*, which is always friendly to the Air Ministry, and for that matter essntially fair in all comments, says :—

> It certainly cannot be said that the increase in the Estimates errs on the side of extravagance. Only two regular units are to be added to the small force of 18 completely formed regular squadrons available for Home Defence. At that rate it would take till 1936 to raise the strength of the regular force to forty squadrons, by no means too many for the defensive work which may some day be demanded of it.

One agrees entirely with the sentiment as expressed. But it is well to remind readers of this paper and of *The Times* that mere money alone cannot give us a bigger Air Force. We might, by merely spending money, easily add a couple of thousand aeroplanes to our stock in the next twelve months. But those machines would be out of date before they were built.

All aeroplanes which are now being built for the Air Force are mere stop-gap designs Therefore it is impossible as yet to standardise any type for mass production unless we are compelled to do so by the outbreak of war.

Moreover if we standardised on wooden aeroplanes we should find ourselves in the event of the outbreak of war, unable to produce them in quantities. It must be remembered that there is not enough suitable timber in the World to provide for mass production of aircraft.

Secondly, if we had the aeroplanes we should still have nobody to fly them because we cannot get enough men of the quality desired by the Medical Staff to become pilots. Nor can we train them any faster than we are doing at present even if we could get more men.

Thirdly—and this is the point on which the whole problem centres—if we had the machines and if we had the pilots we have not got the mechanics to keep those machines in flying order. At a rough estimate it takes 30 men on the ground to keep one aeroplane in the air in time of war. If we increase the number of our pilots by a thousand we have got to find somewhere 30,000 men to keep those men flying.

The Chief of the Air Staff laid down many years ago the fixed policy that we must train and house our mechanics before we can train pilots or order aircraft. And no amount of mere money will find and train the mechanics. The solution of the problem is the expenditure of time and not of money.

DETAILS OF THE ESTIMATES.

Turning now to the various sections of the Estimates, Vote 1 dealing with Pay shows no increase in the number of Air Marshals or Vice-Marshals. It allows for four extra Air Commodores and twelve extra Wing Commanders but only for one extra Squadron Leader and for eleven less Flight Lieutenants.

There is an increase of 21 officers in the Stores Branch and 14 in the Accountants Branch. Under this Vote one discovers five additional civil assistants for No. 2 Stores Ammunition Depot at Altrincham. These appear to be new institutions since last year.

Vote 2 for Quartering and Stores calls for no special comment.

Aircraft Orders.

Vote 3, Technical and Warlike Stores (including Experimental and Research Services) is naturally that which is of most immediate interest not only to the Aircraft Industry but to officers and men of the R.A.F. who are anxious to discover when if ever the R.A.F. is to be entirely equipped with new aircraft.

Sub-head A under this Vote shows an increase of £719,500 for aeroplanes, seaplanes engines and spares. This coupled with the additional money voted by the Admiralty for the equipment of the Fleet Air Arm will mean a very respectable increase in revenue for the twenty firms or thereabouts which constitute the Aircraft Industry.

There is a further increase of £103,500 for Technical and Warlike Stores. Armament and ammunition show an increase of £27,000 and electrical stores are increased by £92,000. Miscellaneous materials are increased by £42,000 and even balloons and their sheds are allowed £34,500 increase.

The increase of £62,000 for petrol and oil will stir up hope in those pilots who really like flying and may cause a certain sinking sensation in some senior officers of the Kiwi class who are now expected by the Air Staff to fly whether they like it or not.

The R.A.E.

Sub-head B, which is the Royal Aircraft Establishment at Farnborough shows theoretically a decrease of £3,000. Just what this means it is difficult to understand but presumably it indicates that the R.A.F. will buy less material of one kind or another from the R.A.E. Against this, however, one discovers that the salaries of the staff at the R.A.E. have been increased by roughly £17,000 owing to increases in the number of staff and that wages have gone up £21,000.

All told, for salaries, wages, materials and stores the R.A.E. is to cost £439,000 this year as against £401,000 last year.

The A.I.D.

That excellent institution the Aeronautical Inspection Department is to cost £140,992 as against £126,980 last year. Nobody will grudge this increase because an increase in the number of inspectors and examiners and so forth may be taken as a measure of the increase in activity in the various aircraft factories. The more work the Trade is doing the more A.I.D. officials are required to inspect it.

Taking it all round, the Aeronautical Inspection Department has been getting along very nicely with the Trade during the past year. But of late there has been a certain amount of dissatisfaction in some aircraft factories because it is said that some of the A.I.D. officials are becoming what may perhaps be best described as pernicketty. This may mean either that individual officers are acquiring a little bit too high a notion of their own importance or it may be that the chiefs of the A.I.D. are drawing their rules of inspection a trifle tighter because of the number of accidents which have occurred in the R.A.F. during the past year or so.

However the chiefs themselves are eminently reasonable men and no doubt this gentle hint that there is a certain amount of mild dissatisfaction in the Trade will prompt them to investigate the justice of these complaints.

Airships.

Sub-head O for airship development shows a total of £440,000 to be spent this year. Considering that this includes such officials as a Civil Aviation Traffic Officer and a Mast Officer and sundry minor officials at Pulham, where optimists hope to operate the reconditioned R.36 during the year, as well as all the engineers, draughtsmen and so forth (including a Comptometer Operator at £125 per annum, whatever may be his function in life) at the Royal Airship Works at Cardington, the amount does not seem excessive. For the sake of the development of airships one can only regret that the amount and the corresponding progress cannot be ten times as great. But we must remember that at certain stages of development mere money cannot hasten progress.

Good Works.

Vote 4, Works, Buildings and Lands, shows a net increase of £445,000, all of it on actual new works. These are obviously fully justified on account of the need for proper accommodation for officers and men the majority of whom are still living in wartime huts. So long as the Department of Works and Buildings is run efficiently nobody can object to increased expenditure. And one believes that the Department is efficient.

Votes 5 and 6, for Medical and Educational Services, which may also be classed as good works, call for no particular comment. The increase in education is £6,000 of which £5,200 is for technical training at Halton and £2,600 for

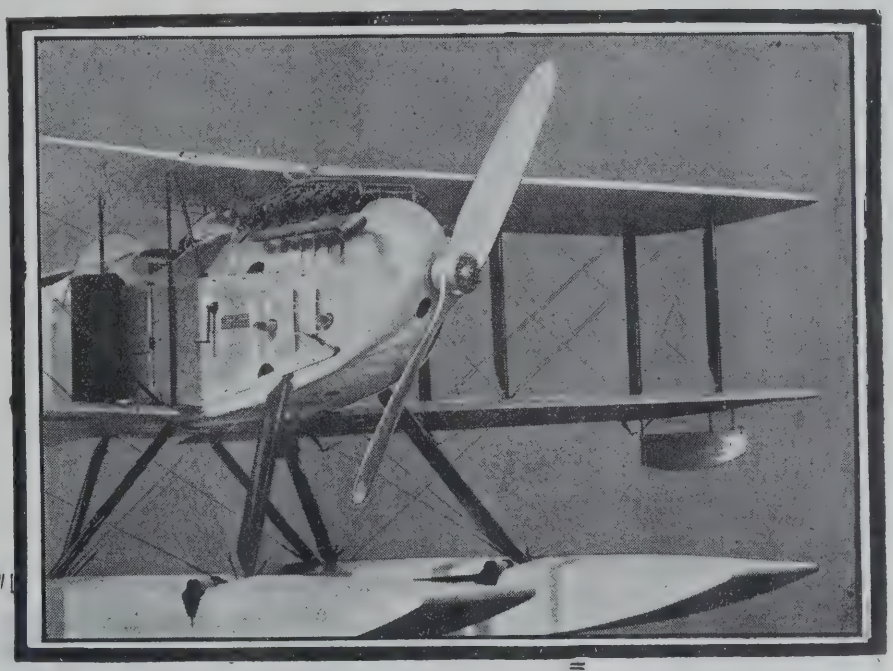
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The reliability of the Reed Airscrew has been demonstrated by such flights as the one recently made from New York to San Francisco; this flight of 2,645 miles, which was made in a Curtiss Pursuit Plane fitted with a Reed Airscrew was completed between dawn and dusk of the same day.

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vocational training of airmen. £200 is saved on the Staff College at Andover and £1,100 on miscellaneous educational services. Thus it will be seen that the education of the men is being improved at the expense of the officers.

Auxiliary and Ancillary.

Vote 7, Auxiliary and Reserve Forces, make up a gross total of £349,000. This is a net increase of £64,000 on last year and the total shows that nothing very much will be done with these branches of the Air Force during the forthcoming year. When the Special Reserve and Auxiliary Forces are fully in being we may expect to see the total somewhere nearer £3,000,000 than £300,000.

Vote 8, Civil Aviation, which may in time become an ancillary service to the R.A.F., shows a total of £369,500, which includes a subsidy of £159,500. Works and Buildings account for £123,000 and aerodromes for £35,000. From this it may be judged that nothing very much is going to be done for Civil Aviation.

If the Government really intended to push progress in Civil Aviation it could very well expend half a million pounds on ordering experimental passenger-carrying aircraft embodying new ideas which would make for safety first instead of allowing its subsidised air line to carry on with aircraft of obsolete design. For it must be remembered that those which are now on order and still unbuilt are essentially just as obsolete in design as are those which are at present in use.

However one has no quarrel with the Air Ministry for economising on Civil Aviation. One still adheres to a belief in Mr. Winston Churchill's dictum that "Civil Aviation must fly by itself."

Vote 9, Meteorological and Miscellaneous Effective Services, also ancillary services, asks for a gross total of £182,000.

Compensation.

Sub-head A of this vote includes £24,000 for "Compensation for Losses." At first sight one might imagine that this was compensation to people who had backed the Meteorological Department's weather prophecies either in the handling of their crops or in the arrangement of outdoor entertainments (which might include anything from Henley Regatta downwards) and had incurred loss in consequence. But examination of the detail shows that this sub-head includes compensation to officers and men for loss of kit, to civilians for personal injuries, to widows of civilians accidentally killed, to owners of property damaged by aircraft, and to persons damaged by mechanical transport and movements of personnel. The last cause of damage seems to open limitless possibilities all the way from damage caused by a clumsy airman knocking down a pedestrian in the street to the followers of R.A.F. Beagles trampling a garden. One is interested to see that the amount allocated is £18,000 out of the total of £24,000.

Further examination shows that the Meteorological Services are actually allotted £77,000, which is an increase of £4,100 over last year. As a matter of fact the Meteorological Service has done extremely good work during the past year. Its weather prophecies have been remarkably accurate and on the whole it seems that the officials of this department are beginning to know very nearly as much about the weather as is known by an experienced sailor or farm labourer. (This remark is by no means a gibe at the Department, for there are certain sailors and rustics who definitely have a gift for prophesying weather changes.)

Vote 10, the Pay of the Air Ministry, provides no opportunities for criticism beyond the fact that everybody seems to be underpaid considering the immense Imperial responsibilities they carry. It pays very much better to deal in soap than in affairs of State. The only consolation one can offer to all the underpaid officials at the Air Ministry is that there is much more fun in making History than in making soap.

Altogther the R.A.F. and the Aircraft Industry can be quite satisfied with their allotment for 1925-26.—C. G. G.

Brussels-Belgian Congo.

On Feb. 16 Lieut. Thieffry, MM. Roger and De Bruycker, who are attempting to fly from Brussels to Kinshasa, in the Belgian Congo, on a Handley Page W.8F (one Rolls-Royce Eagle and two Siddeley Puma engines), left Perpignan at 08.50 hours and after flying across the Mediterranean landed at Oran at 17.25 hours.

On Feb. 18 they arrived at Colomb-Bechar from Oran at 16.05 hours.

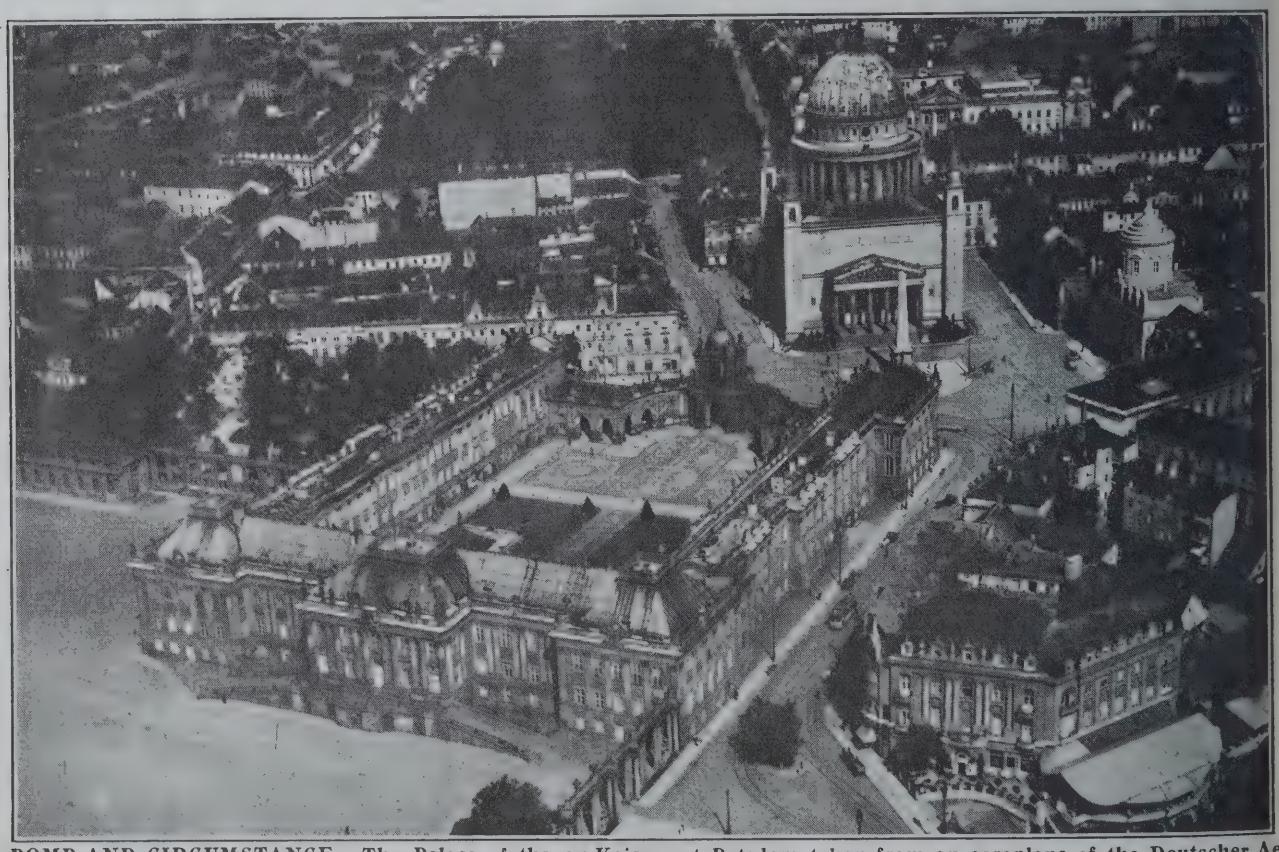
On Feb. 22 they were reported to have arrived at Gao on the Niger River. The crossing of the Sahara was made with great difficulty, bad weather causing a temporary delay at Oualleh.

A message from Lieut. Thieffry states that:—

"The health of the crew is splendid and the machine in perfect condition. A rest will be necessary at Gao. There is now every reason for hope."

It will be remembered that this expedition left Brussels on Feb. 12 and that they were held up owing to heavy snow storms and head winds on the first stage of their flight to Perpignan.

The Handley Page W.8F used on this expedition was built in Belgium by the S.A.B.C.A.



POMP AND CIRCUMSTANCE.—The Palace of the ex-Kaise r at Potsdam taken from an aeroplane of the Deutscher Aer Lloyd. The proximity of plebian tramcars to the erstwhile abode of the autocrat is interesting, as evidence of pre-wa democracy.

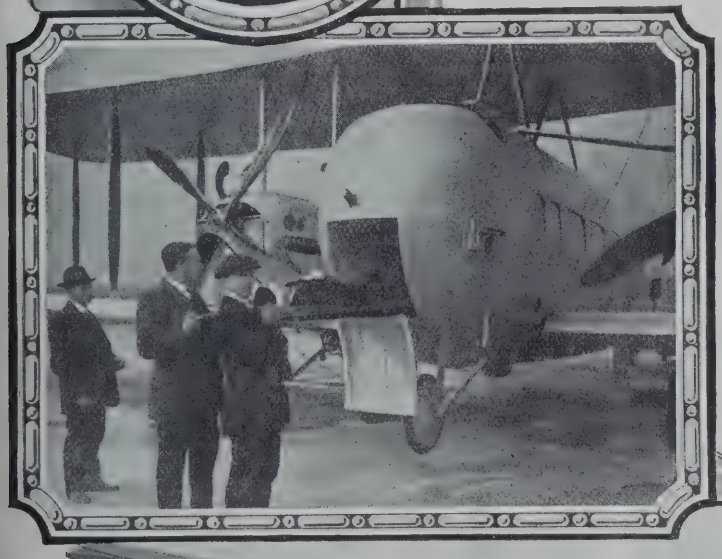
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THE ROYAL AIR FORCE.

The London Gazette.

... Feb. 17.

Air Marshal Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O., is appointed Principal Air A.D.C. to the King (Feb. 10) (vice Air Chief Marshal Sir H. M. Trenchard, Bt., G.C.B., D.S.O.).

Group Capt. C. F. Kilner, D.S.O., is appointed Air A.D.C. to the King (Jan. 1) (vice Air Commodore C. L. N. Newall, C.M.G., C.B.E., A.M.).

General Duties Branch.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—H. I. Cozens (Dec. 14, 1924); C. Mackenzie-Richards (Feb. 14); F. J. Fressanges (Feb. 15); N. A. P. Pritchett (Feb. 15).

The following Plt. Offs. on probation are confirmed in rank (Dec. 30, 1924):—C. R. Cubitt, R. N. T. Gape, H. C. V. Jolleff, R. C. L. Limbert, A. L. Ottway, V. B. Bingham-Hall, M.C. (Feb. 2); B. F. H. Harding (Feb. 9). Flg. Off. S. A. Conway is placed on the retired list (Feb. 14). The following Plt. Offs. on probation resign their S.S. comns. (Feb. 9):—D. P. Clayton, R. C. B. Hendy, J. H. Hunter (Lt., R.A.R.O., Worcs. Regt.).

Flt. Lt. W. M. Smith relinquishes his S.S. comn. on account of ill-health and is permitted to retain his rank (Feb. 18). Plt. Off. I. B. Pigott relinquishes his S.S. comn. on account of ill-health (Feb. 17). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty:—L. Connolly (Feb. 11); C. N. Boswell (Feb. 18).

Flg. Off. H. W. Iles is cashiered by sentence of General Court Martial (Jan. 28). Flg. Off. R. de H. Hutchinson is dismissed the service by sentence of General Court Martial (Jan. 28).

The notification in the *Gazette* of Jan. 20, concerning Flg. Off. C. P. Wingfield, is cancelled.

Stores Branch.—The following are granted perm. comns. in the ranks stated (Feb. 18):—Flt. Lt. J. S. Browne, A.F.C.; Flg. Off. S. R. L. Poole. Flg. Off. C. P. Wingfield is transferred to the Stores Branch on probation (Feb. 9).

Reserve of Air Force Officers.—C. E. Baldwin is granted a comn. in Class B.B. General Duties Branch, as a Plt. Off. on probation (Feb. 17).

Flg. Off. G. Kidd is transferred from Class A. to Class C. (Feb. 17).

Flt. Lt. B. C. W. Pasco is transferred from Class Dii. to Class Di. (Feb. 11).

Errata.

Gazette of Feb. 3, p. 782:—For Alban Winfred Henderson read Allan Winfred Henderson.

Gazette of Feb. 10, p. 995:—For Nicholls, read Nicolls.

Appointments.

Week ending Feb. 23.

The Air Ministry announces the appointments of Air Marshal Sir John Maitland Salmond, K.C.B., C.M.G., C.V.O., D.S.O., as Principal Air Aide-de-Camp to the King vice Air Chief Marshal Sir Hugh Trenchard, Bart., G.C.B., D.S.O., and of Group Capt. Cecil Francis Kilner, D.S.O., as Air Aide-de-Camp vice Air Commodore Cyril Louis Norton Newall, C.M.G., C.B.E., A.M.

General Duties Branch.—Squadron Leaders G. W. Robarts, M.C., to No. 111 Sqdn., Duxford, 26/2. C. W. Mackey, to No. 7 Group H.Q., Andover, 19/2. H. E. F. Wyncoll, O.B.E., M.C., to No. 24 Sqdn., Kenley, 20/2. G. G. A. Williams, to No. 1 School of T.T. (Boys), Halton, 17/2. A. P. Maurice, D.F.C., to Aircraft Park, India, 13/2.

Flight Lieutenants A. C. Randall, D.F.C., to Station H.Q., Duxford, 18/2. M. A. Simpson, to I.A.A.D., Henlow, 18/2. J. Whitford, to No. 11 Sqdn., Netheravon, instead of to No. 12 Sqdn. as previously notified, 24/2. D. Colyer, D.F.C., to Aircraft Depot, Iraq, 1/2. E. Thornton, to Aircraft Park, India, 17/1. J. A. Hollis, to No. 5 Sqdn., India, 26/1. C. H. N. Nunn, to No. 1 S. of T.T. (Boys), Halton, 2/3. G. M. Bryer, O.B.E., A.F.C., to Air Ministry, 1/3. R. St. H. Clarke, A.F.C., to No. 10 Group H.Q., Lee-on-Solent, 2/3.

Flying Officers F. E. C. Benstead, to H.Q., Iraq, 13/2. L. A. W. Deane, to I.A.A.D., Henlow, 9/1. B. H. C. Russell, to School of Army Co-operation (No. 16 Sqdn.), Old Sarum, 23/2. L. E. Cutforth, to No. 5 Sqdn., India, 13/2. L. S. Hamilton, to Aircraft Depot, India, 13/2. C. J. A. Delany, to No. 27 Sqdn., India, 13/2. A. T. Laing, to Heliopolis Details, Egypt, 30/1. T. H. Moon, to Inland Water Transport, Iraq, 30/1. C. N. H. Bilney, to Marine Aircraft Exper. Estab., Felixstowe, 2/3. F. Miller, to Station H.Q., Bircham Newton, 23/2. H. N. Thornton, to Aircraft Depot, Egypt, 1/2. G. W. Dean, to No. 24 Sqdn., Kenley, 2/3. K. H. Holley, to No. 1 F.T.S., Netheravon, 23/2. W. A. C. A. Yearsley, to No. 25 Sqdn., Hawkinge, 9/2. W. C. Williams, to No. 2 F.T.S., Digby, 23/2. H. S. C. Bassett, to No. 11 Sqdn., Netheravon, 20/2. R. F. Carter, to No. 11 Sqdn., Netheravon, 16/2. A. L. R. Duke and G. N. P. Stringer, to No. 39 Sqdn., Spittlegate, 16/2. W. F. Humphrey, to No. 111 Sqdn., Duxford, 16/2. M. E. B. P. Storrie, to No. 17 Sqdn., Hawkinge, 16/2.

Pilot Officers H. D. Gunton, to No. 4 F.T.S., Egypt, 13/2. The undermentioned Pilot Officers are all posted with effect from 16/2:—J. M. Cohu, to No. 11 Sqdn., Netheravon. F. H. S. David and A. W. G. Martin, to No. 99 Sqdn., Bircham Newton. C. Feather, H. S. Martin and G. B. M. Rhind, to No. 111 Sqdn., Duxford. E. A. H. Fisher and H. M. G. Parker, to No. 100 Sqdn., Spittlegate. R. A. Ford and A. N. Francombe, to No. 207 Sqdn., Eastchurch. V. G. H. Gee, W. V. R. Nicholl, and N. A. West, to No. 12 Sqdn., Andover. M. W. Goldie, to No. 39 Sqdn., Spittlegate. H. R. Lowry, A. L. Macmillan and R. R. Bennett, to No. 17 Sqdn., Hawkinge. H. F. Luxmoore, A. W. B. McDonald, C. S. Staniland and H. W. P. Stewart, to No. 41 Sqdn., Northolt. A. D. McDowall and C. D. Shearing, to No. 9 Sqdn., Manston.

Medical Branch.—Flying Officers G. J. Griffiths, to Research Laboratory and M.O.S. of I., Hampstead, on appointment to a S.S. comn. for short course, 11/2. C. G. J. Nicolls, M.B., and B. Pollard, to R.A.F. Depot, 19/2.

Chaplains' Branch.—The Revd. G. A. Davies, B.A., to Basrah Group H.Q., Iraq, 30/1.

Stores Branch.—Squadron Leader J. H. Wilford, to No. 7 Group H.Q., Andover, 9/2. Flying Officer H. J. Thomas to remain at I.A.A.D., Henlow.

Accountant Branch.—Flying Officer M. H. Luker, to Heliopolis Details, Egypt, 30/1.

The Staff College, Camberley.

The following officers of the Royal Air Force have been nominated for admission to the Staff College, Camberley:—Wing Cdr. F. L. Robinson, Sq. Ldr. R. H. Peck.

Commissions from the Universities.

The Air Ministry announces that on the recommendation of their Universities the undermentioned graduates were appointed to permanent commissions as Pilot Officers in the General Duties Branch of the Royal Air Force on Jan. 17 with an antedate in each case of 12 months' seniority, under the university candidates' scheme of entry:—Charles Ronald Hancock, Cambridge University; Allen Henry Wheeler, Cambridge University; John Henry Powle, Bristol University; Charles Herbert Tighe, Dublin University.

The Sheerness Course.

The following officers of the Royal Air Force have joined the Army Senior Officers' Course, Sheerness, for the first of the three courses to be held in 1925. Wing Cdr. J. H. S. Tyssen, M.C., and Sq. Ldr. A. T. Harris, A.F.C.

Army Co-operation.

An Army Order has recently been issued describing the procedure to be followed in the event of the pilot of an aeroplane being compelled to make a forced landing in a field in which troops are parading or carrying out manœuvres:—

If an aeroplane approaches a field in which there are troops, and there is not time for the troops to double to the sides of the field, they should not be allowed to scatter in an endeavour to dodge the aeroplane, but should lie down immediately; for if the men are allowed to run about it not only confuses the pilot and increases the chance of a crash, but renders the men liable to be hit by the aeroplane.

If a crash takes place near a military barracks, camp, or detachment, the troops witnessing it will on their own initiative render all assistance possible in removing the pilot and passengers from the wreckage; but in order that subsequent investigations may be made to determine the cause of the crash, the wreckage should be disturbed as little as possible in so doing. The troops will also obtain the nearest medical assistance.

The Defence of London.

The *London Gazette* of Feb. 20 contains the announcement of the appointment of Lieut.-Colonel P. T. Etherton, Indian Army, to the command of the 51st (London) Anti-Aircraft Brigade, which forms part of the new Territorial scheme. The *Times* says:—

Colonel Etherton has had much experience in the organisation and command of technical schools in bombing and light gun work during the war. A few years ago he led an expedition across Asia from India to Russia by a route never previously traversed. In 1918 he succeeded Sir George Macartney as Consul-General in Chinese Turkestan, prior to which he had been despatched by his Majesty's Government on a special mission to Central Asia.

The following notes are extracted from an article on the City Air Force Squadron by the Aeronautical Correspondent of the *Times* which appeared on Feb. 19:—

The headquarters of the City of London Auxiliary Air Force Squadron, officially to be known as No. 600 City of London (Bombing) Squadron, and one of the first to be formed under the scheme for home defence against air attack, are, subject to confirmation, to be the Finsbury Barracks, which were at one time the headquarters of the old Militia. This follows the definite acceptance by the City Territorial Association of the responsibility of raising volunteer air units, and the title of the body has now been changed to that of the Territorial Association and Auxiliary Air Force Association for the County of the City of London. Contemporaneously with that alteration, it has been decided to add three military members of the Royal Air Force to the governing body, and co-opt three gentlemen to represent Air Force interests. Besides the City Squadron another is to be formed by the County of London Territorial Association.

The Finsbury barracks will be the general headquarters with a technical annexe, while the actual flying work will be carried out at Hendon. Here the unit will be trained with a single-engined type of bomber and, in addition, it will have a war station to which it will proceed for periodical training. The *personnel* which the City has undertaken to raise comprises 25 officers and 151 men, and, in addition to this voluntary *personnel*, the R.A.F. provides a small permanent staff of one flight-lieutenant and 22 men to facilitate the training and maintain the machines in trim. When fully constituted the squadron will have 12 Service machines and two training machines, divided between three working flying flights and a headquarters flight.

The Territorial and Auxiliary Air Force Association hope to enlist the patriotic help of skilled and technical young men. Each flight will have its due proportion of carpenter riggers, that is men with a knowledge of woodwork, upon which will be superimposed instruc-

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(Inset is of Engine and its Power Curve on Air Ministry Test.)

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8	Air.	120 at 1,500 r.p.m.	128.	140.
Propeller Revs. Half Engine Speed.	Running weight without fuel 452 lbs.	Running weight per H.P. 3.53 lbs.	Petrol consumption per b.h.p. hour. .62 pts.	Oil consumption per b.h.p. hour. 044 pts.

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tion in the rigging and handling of aircraft, while there will also be a number of aero-engine fitters in each flight.

The headquarter flight is always vested with the control of the specialised work associated with the maintenance of aircraft, and here there is scope for a number of crafts. Two acetylene welders are needed, three men as telephone operators, three as armourers, two as blacksmiths, four as carpenter riggers, and three as carpenters general, six as cooks and butchers, four as coppersmiths, six as drivers, one as a motor-cyclist, five as electricians, five as aero-engine fitters, two as motor fitters, five as photographers, three as turners, four as wireless operators, and others as wireless mechanics. A technical sergeant-major is needed in the headquarter flight and 16 N.C.O.s, while there will be three flight sergeants and six N.C.O.s divided among the three flying flights.

The uniform is to be the same design and cloth as that of the Royal Air Force, but with a suitable badge to distinguish the character of the unit. The rates of pay will be the same as those for the Royal Air Force when the squadron is under its annual training, while the men will also draw a bounty in a similar manner to the members of Territorial units.

At the moment the association is not ready to enrol volunteers, but any names sent in will be registered against the time when enlistment begins.

No. 46 Squadron Dinner.

No. 46 Squadron Dinner will be held at the Hotel Cecil on Mar. 28 (Boat-Race Night), at 7.15 for 7.45. Tickets, 25s. each (including wine), may be obtained from Mr. C. Marchant, 10, Bush Lane, E.C.4. Guests will be allowed if sufficient notice is given.

The foregoing is the official notice, but Mr. Marchant has sent out to all with whom he is personally in touch a very amusing circular about the dinner written on the lines of the well-known furniture advertisement of Mr. Drage. Former members of 46 who have not received this circular will at any rate get a laugh, if not a dinner, by applying to him for a copy.

The R.A.F. Rugby Cup.

The following are the results of the third round of the R.A.F. Rugby Cup Competition. The figures in brackets are the number of points scored:—Digby (10), Manston (10), Henlow (8), Flowerdown (6), Cranwell (3), Halton (3), Upavon (3), Biggin Hill (3).

The semi-final tie between Digby and Henlow will take place at Spittlegate on Mar. 7, and that between Flowerdown and Manston at Uxbridge on the same date. The final will be played at Uxbridge on Mar. 21. The present holders are Netheravon, who beat Duxford last year for the second time in succession.

Rugby Football.

R.A.F. v. Northampton.—The R.A.F. beat Northampton, at Northampton, on Feb. 19, by two goals to one goal and a try. The *Times* states:—There was little to choose between the forwards, and the backs on both sides made several good passing movements. As the result of one of these, Lowe sent Wale over for a try, the last named kicking the goal himself. Good handling by the home three-quarter backs ended with Williams crossing the R.A.F. line, and Vaughan made the scores level by kicking a goal. After the interval, the visitors were the better side for some time, and a mistake by Northampton allowed Macey to gather the ball and to touch down under the posts, Wale converting. Within a few minutes of this score Williams obtained an unconverted try for Northampton. The home side pressed strongly towards the finish, but could not break down the R.A.F. defence.

Association Football.

Air H.Q., Iraq v. The Beds. and Herts. Regt.—(From the *Times of Mesopotamia*, Jan. 31): The game was played at Hinaidi on Jan. 19, in ideal conditions. The game was keenly contested from start to finish, and the result, three goals to nil in favour of Air H.Q., was slightly flattering to them. The scoring was confined to a period of five minutes midway through the first-half, during which time the forward line of the Airmen completely monopolised the game; the goals in each case was the result of fine combination, particularly the second, which was a great shot by Sjt. Lockhart from 25 yards out, the home custodian having no chance whatever. After these repulses the Army team played up strongly, and made vigorous assaults, without success, on the Air H.Q. goal.

The second half produced football of an equal standard, but both defences came out on top. A feature of the game was the resolute tackling and magnificent kicking of the respective left backs of both teams. Both goalkeepers displayed confidence, and the Army team showed a good understanding, but lacked finish in front of goal. For the Airmen Sjt. Lockhart, at centre-half, was a tower of strength, and a dominant feature of the game was the manner in which he set in motion the clever forward line of Air H.Q.

Air Affairs in Parliament.

THE NAVAL AIR ARM VOTE.

In the House of Commons on Feb. 18, Viscount Sandon asked the Secretary of State for Air why the Estimates for the Naval Air Arm were being placed on the Navy Vote, in view of the terms of the Report of the Committee of Imperial Defence, which was accepted by the Government in 1923?

Sir S. Hoare: Provision for the Fleet Air Arm continues to be taken in the gross of Air Estimates as heretofore. An Appropriation-in-Aid is also taken, however, representing a grant from the Admiralty in respect of its cost. This latter sum will be voted in Navy Estimates. This procedure was decided upon by the Treasury, with Admiralty and Air Ministry assent, in accordance with the suggestion in the fourth recommendation of the Sub-Committee of the Committee of Imperial Defence upon the Relations of the Navy and the Air Force (Cmd. 1938).

THE CAIRO-BAGHDAD MAIL.

In the House of Commons on Feb. 18, Viscount Sandon asked the Secretary of State for Air if any steps were being taken to remedy the deficiency in skilled personnel and to improve the quality of the aircraft on the Cairo-Baghdad air-mail route?

The Under-Secretary of State for Air (Major Sir Philip Sassoon): My Noble Friend's question is based, I think, on a misunderstanding. The primary object of the operation of the desert air route is not the carriage of mails but the affording of a training exercise to pilots and ground personnel of the Royal Air Force in long-distance flying under conditions similar to those of active service and the employment under the same conditions of various standard types of aircraft and engines. This object would not be attained if the operation of the route were restricted to a few highly specialised personnel or to any one particular type of machine. I would add, however, that the delays due to engine or other failures of aircraft flying over the route have decreased progressively since it was initiated.

[Sir Philip Sassoon has, in his reply to Lord Sandon, explained what the R.A.F. have been trying to explain to the somewhat dense civilian mind ever since the Cairo-Baghdad Service started.]

THE R.A.F. RESERVE.

In the House of Commons on Feb. 20, in reply to a question by Sir F. Sykes, the Secretary of State for Air said that 488 qualified pilots had joined the Reserve direct from civil life and without passing to it through the Short Service Commission stage. Sir Samuel Hoare said that he was not satisfied that the present number of Reserve officers was sufficient and provision would be made in the Estimates for widening the field of recruitment.

Phlegm.

There is a story from India, illustrating the unimpressionability of the Englishman, which deserves to be put on record. In the course of a flight across India a certain machine carrying an N.C.O. passenger landed at Agra, properly pronounced Ahgrah. A friend, who had been stationed at Agra long enough to regard himself as indigenous, met the N.C.O. shortly after his arrival and asked him how he liked the place. The N.C.O.'s reply was that he quite liked "Aggra" since he had had "a decco at the Taj gadget"—The man who could call the Taj Mahal a gadget is capable of regarding the Race War as a skirmish.

A Magnesium Airscrew.

A Reed airscrew, made from a magnesium alloy for a 150 h.p. engine, to the design of Mr. S. A. Reed, built by the Curtiss Co., was successfully tested for 10 hours at 100 per cent. overload, by the U.S. Air Service Engineering Division at McCook Field during the first week of January, and is now to be put into test in the air by the Curtiss Company. As magnesium is approximately two-thirds the density of aluminium, and magnesium alloys are little inferior in strength to aluminium alloys, success with this airscrew may lead to quite a noticeable saving in weight.

The Rhymes of Rufus Ruderbar.

No. 3.—The Kiwi (Part II.—A Sequel, Ending or Conclusion to the Kiwi rhyme published last week.)

There came a man who stated "I
Can see no valid reason why
Each blessed Kiwi shouldn't fly;
Each is a bird, is not he?"
He chased them left, he chased them right,
Gave them no rest by day or night
And gave each Kiwi such a fright
That nearly drove him dotty.

A wonderful sight it was to see
Each respectable staid Kiwi
Straining his muscles at every bound
In vain endeavour to leave the ground.

The Kiwis said "This is damrot;
Dual instruction's clearly what
We need; I think Bill Sparrow's not
A bad instructor, is he?"
Then straightway each sought out the aid
Of an instructor tried and staid,
For thought of flight made them afraid
And stunting drove them dizzy.

A wonderful sight it was to see
Them practising landings on every tree,
While stunting swallows and swifts on high
Shrieked loud with joy as they watched them fly.

But 'twas so long since they had flown
That rooted to the ground they'd grown
And when they took the air alone
They crashed in all directions;
They crashed to left, they crashed to right,
They always crashed on every flight,
Till not a Kiwi was in sight
Save those in tiny sections.

A wonderful sight it was to see
The scattered remnants of poor Kiwi:
But an ill wind 'tis that blows no good—
The rest of the birds found far more food.

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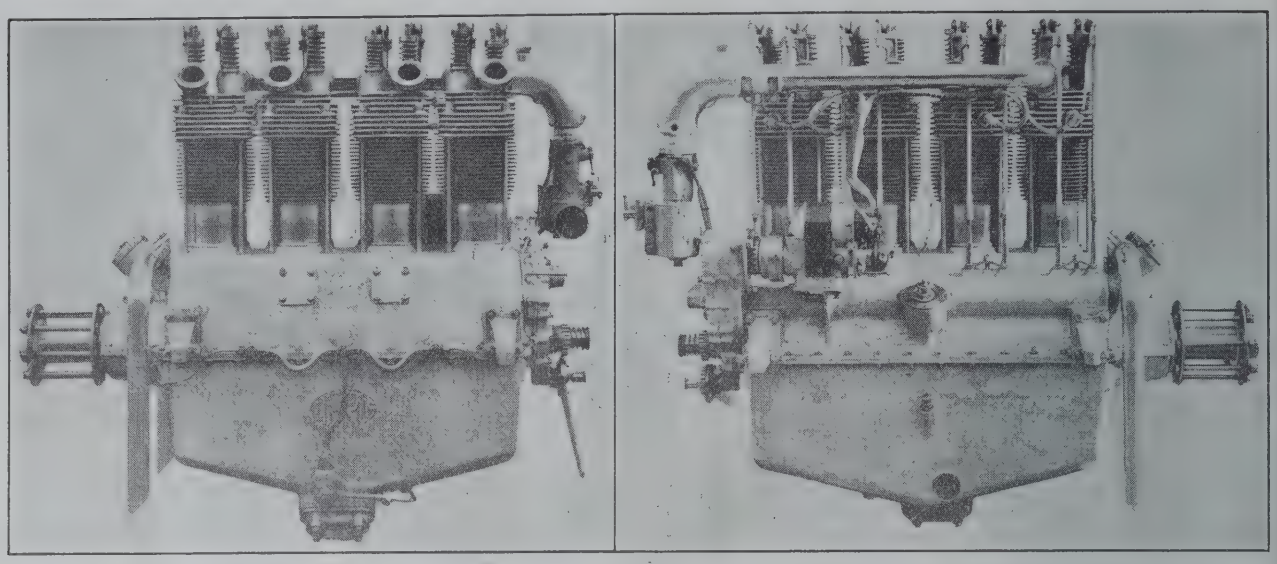
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AIRDISCO ENGINES.



THE CIRRUS ENGINE.—Two side views of the new 60 h.p. Cirrus engine built by the Aircraft Disposal Co. Ltd.

The 120/140 h.p. Airdisco air-cooled engine which was described in THE AEROPLANE of Dec. 3, 1924, has now been subjected to practical flying tests of an extensive and severe nature in Avros and D.H.51s with results that are even more satisfactory than had been hoped for. It may be mentioned that Air Commodore J. G. Weir has purchased a D.H.51 with the Airdisco engine for his own use, and that the Air Ministry are to test another similar machine at Martlesham. A. V. Roe and Co. Ltd. are fitting one of these engines to a machine for demonstration purposes so that it is evident that the engine promises to meet a fairly definitely-felt need.

A new Airdisco engine, known as the Cirrus, has recently been produced to meet another type of demand. This is a four-cylinder vertical using the cylinders and certain other components of the Airdisco 120 h.p. It is rated at 60 h.p. at 1,800 r.p.m., with a maximum of 65 h.p. at 2,000 r.p.m. Major F. B. Halford, of "B.H.P." and "Puma" fame, has been responsible for this as for the previous Airdisco, and it is safe to predict that this new engine will prove to be one of the most reliable and serviceable of all the aero-engines yet produced.

The Cirrus is not intended to compete with the very light type of Light Aeroplane engines which are now in the experimental stage, but rather to provide an immediate solution to the demand for an engine which can be used for two-seater machines of a much more economical type than the standard class of training and touring machine. The engine is admittedly heavy—its weight is 260 lbs. or 4.33 lbs. per h.p.—which in point of fact compares not unfavourably with the power/weight ratio of certain much smaller light aeroplane engines—particularly such as have had the benefit of Air Ministry supervision in design.

As is well known the Cirrus engine has been fitted to the D.H. Moth two-seater which is essentially a light aeroplane as the loaded weight is only 1,350 lbs. The machine can confidently be expected to give an exceedingly satisfactory all-round performance.

The Cirrus is shown in a series of photographs here reproduced. The cylinders are of cast-iron with detachable aluminium alloy heads and overhead valves. Aluminium alloy pistons are fitted, and as the crankshaft is identical with that of the eight-cylinder engine an extremely long life may be expected from crankshaft and big-end bearings. A properly designed self-contained lubricating system is employed, the carburettor is a Zenith with an exhaust heated air muff on the exhaust pipe. A hand-starter of ratchet type similar in principle to the kick-starter of a motor-cycle, together with an impulse magneto coupling, are fitted as standard, which will make it possible to start the engine from the pilot's seat without trouble.

This engine should solve the problem which is now vexing the promoters of light aeroplane clubs by providing a reliable and cheap power plant for two-seaters. A lower total weight would be an undoubted advantage, and it is certain that when a sufficient demand for engines for this purpose arises Major Halford and the Aircraft Disposal Co. will find no serious difficulty in producing an engine of similar output and greatly reduced weight without sacrifice of reliability or simplicity. But in fact for light and semi-light two-seaters the weight of the present engine is by no means so serious as some people undoubtedly imagine.

The cost of cutting 100 lbs. off the weight of the engine would be absolutely prohibitive while production remains on its present minute scale. The carriage of this extra weight on such a machine as the Moth naturally reduces the possible performance, but a reasonably priced aeroplane with a reasonable performance is at the moment preferable to a prohibitively costly machine whatever its performance—a fact which appears to have escaped the notice of certain official quarters.

The D.H. 60.

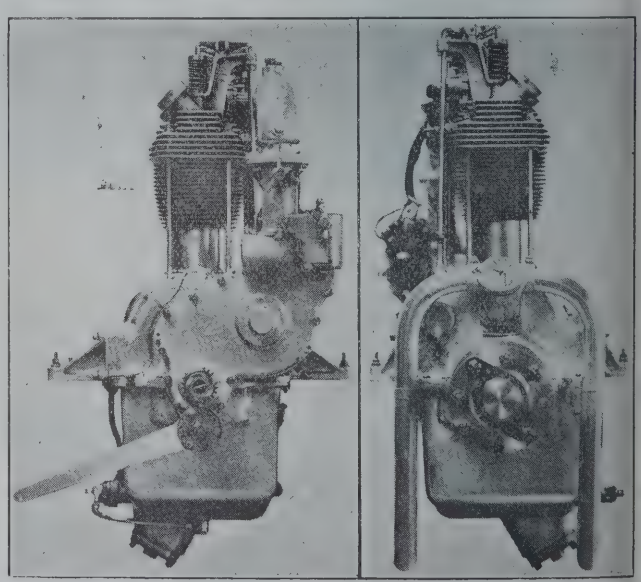
The D.H.60 (the Moth) fitted with the Aircraft Disposal Company's Cirrus engine, made its first flight at Stag Lane on Sunday afternoon. Capt. Geoffrey de Havilland took it up for the first test and then, with Mr. Broad as passenger, he made a more extended flight.

Further news of the machine with full particulars will probably be available next week.

Air Racing.

It is announced that the proposed Air Race meeting, which was to have been held by the Royal Aero Club at Hendon at Easter, has been abandoned.

The race for the King's Cup will take place on July 3 and 4 It will consist of two circuits of the 1923 course and will start and finish at Hendon on both days.



THE CIRRUS ENGINE.—Rear and front views of the 60 h.p. Cirrus engine. Note the hand-starter.

"MOTH"

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THE DEVELOPMENT OF THE LIGHT AEROPLANE ENGINE.

The paper by Lt.-Col. L. F. R. Fell on Light Aeroplane Engine Development at a joint meeting of the Royal Aeronautical Society and of the Institution of Automobile Engineers, discussed the problems of the light aeroplane engine in some detail. Col. Fell, who is of the staff of the Directorate of Supply and Research at the Air Ministry and head of the engine section of that Department, is an authority of particular competence on the subject of aero-engines in general, and the paper is therefore to be welcomed both for the intrinsic value of the author's opinion on this subject and for the light which it throws on the possible attitude of the Air Ministry towards new designs for engines of this class.

Rating and Output.

Col. Fell points out that the light aeroplane engines at the Lympne competition were run at outputs which compare very favourably with the best Brooklands results for engines of similar capacity and at higher outputs per unit of cylinder volume than is achieved in modern high-powered aero-engines at their highest permitted r.p.m. and in some cases the power taken was 50 per cent. in excess of the maker's rating. The relative unreliability of these engines is therefore not surprising. Curiously enough, although he definitely objects to the cylinder capacity rating and believes that a continuous b.h.p. rating should be adopted, leaving the bore and stroke to the designer's discretion, he does not appear to appreciate to how great an extent the cylinder capacity rating is directly responsible for the over pressing of these engines. In fact he states that any aeroplane engine will always be called upon to give the maximum output compatible with its capacity and thus suggests that the engine designer is powerless to prevent over loading of an engine, which is scarcely true.

Reliability and Cost.

The difficulty of attaining so good a power weight ratio in small engines is attributed to the fact that a much larger proportion of the total weight in a small engine is absorbed by such auxiliaries as magneto, carburettor and oil pump, and in a later passage to the greater weight per unit of volume of small as compared to large cylinders.

The author points out that to secure reliability to the same extent as is achieved in larger engines, the same degree of refinement of design and the same high quality of workmanship and material is required in the light aeroplane engine as in the larger types. In particular he considers altitude controls for the carburettor, complete dual ignition and dry sump lubrication as being at least as necessary on the light aeroplane engine as it is in the high-powered type.

He takes up the attitude that the light aeroplane engine is and must continue to be a "high efficiency" engine comparable, so far as motor vehicle engines go, only to track racing car engines. Therefore only engines embodying the highest class of workmanship, materials and design are possible for this purpose and that such engines must necessarily be relatively expensive.

[Curiously enough in his remarks on The Choice of Type and Design, the author states that had the 1,100 c.c. limit not been imposed in the Air Ministry Competitions it is safe to say that engines with much larger bores running at much lower r.p.m. and giving much greater reliability at a negligible increase of weight would have been produced. Personally, one does not believe that such engines would have been produced—the engine-producing industry with a few notable exceptions is neither sufficiently interested in light aeroplanes nor sufficiently enterprising to turn out new types of engines for such purposes as a speculation—but one is perfectly certain that such engines could and should be produced for light aeroplanes, and this admission practically knocks the bottom out of the whole of his arguments as to the necessarily expensive nature of light aeroplane engines.]

Water and Air Cooling

Col. Fell is surprised that in view of the competition between water and air cooling in large aero-engines the advocates of water cooling should have left the field clear to the air-cooled type. He states that the air-cooled type is not necessarily lighter than the water-cooled type and that the water-cooled type can be produced for a very much reduced frontal area and head resistance. From the point of view of reliability, the motor-car manufacturers undoubtedly hold that the water-cooled type is superior. It is simpler to make a water-cooled multi-cylinder engine than an air-cooled multi-cylinder engine, and high speeds of rotation are more easily obtained with the water-cooled type—which allows an engine of smaller capacity to be used.

The advantages of water-cooling are considered sufficiently great to warrant serious consideration of the water-cooled light aeroplane engine. Further, there are a number of water-cooled track racing engines capable of performances suitable for light aeroplane engines which only require developing in a lighter form to make them suitable.

Col. Fell considers that on the evidence of Sunbeam racing engines the use of a supercharger offers a practical method of increasing the performance of light aeroplane engines.

Available Types.

He then proceeds to discuss various arrangements. The Vee twin is dismissed as having no particular merits for aircraft work. The flat twin has the merits of simplicity. A strong mounting is necessary to take the torque reaction and there appears to be a limit to the cylinder capacity imposed by balancing difficulties with a bore of over 90 m/m. Owing to the large size of cylinders for a given volume the type is unsuitable for high speeds and therefore cannot use its capacity to the full. With a supercharger an engine of 1,100 c.c. of this type should be capable of 38/40 h.p. at under 3,000 r.p.m. The type represents the least difficulties for air cooling. Within certain limits it should be possible to produce an engine of this type having as good a power weight ratio as any other.

The flat four has advantages over the twin of smaller dimensions, lower resistance, better balance, smaller torque recoil, and can be built to twice the capacity limit of the twin. It is considered to be worthy of the attention of designers.

The three-cylinder radial has a high frontal area because it needs a large crankcase for the triple connecting-rod arrangement. It is heavier than the flat twin, but better balanced and has less torque recoil. A neat induction system is difficult to arrange, it is more expensive than the twin and the vertical cylinder is difficult to cool and its exhaust comes at an inconvenient position for the pilot.

The five-cylinder radial is ruled out for 1,100 c.c. by the small size of individual cylinders. It has, however, much to recommend it. Though expensive, the author regards it as a promising type.

The swashplate type of engine has always appealed to the aeroplane designer, but so far mechanical difficulties in the transmission have prevented its adoption. It is hoped that these difficulties will be overcome in the near future, but it is believed that it could be produced in the power required for light aeroplanes without difficulty.

Vertical Fours.

It is regarded as curious that the four-cylinder-in-line type which is the commonest type of car engine should not have come into prominence for light aircraft. The difficulty of cooling the rear cylinders in an air-cooled version without an elaborate system of air scooping and a consequent high resistance with one or two other minor difficulties account for the absence of the air-cooled vertical four. The water-cooled type has many good points. Col Fell suggests an inverted engine, with radiators built onto the side of the cylinder block, steel liners in aluminium cylinder castings and generally conforming to high class racing car practice as a really satisfactory solution of the problem. He believes that such an engine could be made at a weight not exceeding that of a flat twin (presumably air-cooled).

Luxury!

He even goes on to suggest that there may be luxury types of light aeroplane fitted with straight six and straight eight engines. His final conclusions as to type are that the single-seater should be fitted with a flat twin air-cooled type, the normal two-seater with either a five-cylinder radial or a four-cylinder vertical water-cooled type, and the luxury or speed light aeroplane with a six- or eight-cylinder water-cooled engine.

The installation of the Lympne engines is criticised and the author claims that just as light aeroplane engines should embody all the refinements of design called for in the 400/1,000 h.p. aero-engine, so should the same degree of care be taken over installation. [In so far as care is concerned he is obviously right, but when he implies, as he seems to, that an equal degree of complexity is essential one must hesitate to follow him.]

THE DISCUSSION.

The discussion was fairly well divided between the Aeronautical and the Automobile section of the audience and betrayed—on the whole politely—an attitude of incredulity as to the soundness of Col. Fell's opinion. In the reply, the author to all intents and purposes said that if the aeroplane designer was content with fairly heavy low duty type of engine he could have it at once, but indicated that in his (Col. Fell's) opinion the type was unworthy of serious consideration.

[The paper represents one perfectly legitimate attitude on the subject of light aeroplane engines as it is interpreted by an individual of very considerable knowledge and experience. This attitude however is not the only one which it is possible to take. Briefly, Col. Fell claims that in the light of extensive experience it is not possible to produce a satisfactory light aeroplane engine unless one is willing to adopt standard aero-engine practice. And this attitude—which may prove to be justified—leads to the conclusion that one

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GEO. THARRAT 1925

cannot possibly produce a light aeroplane engine that shall not be a complicated and exceedingly expensive piece of mechanism which will require considerable skilled attention to maintain it in running order. From this the deduction is inevitable that the light aeroplane is of little or no practical value. There is another way of looking at the problem from the other end. Starting from the consideration that the light aeroplane must be cheap both in prime cost and in maintenance, one will conclude that it is necessary to discover how to build a light aeroplane engine which will be reliable, but nevertheless simple and cheap both to build and to maintain. It can be done and Col. Fell has indicated precisely how it can be done. Probably—even certainly—early efforts to attack the problem from this end will lead to engines which on the weight per h.p. basis will sound impossibly heavy. But if the weight analyses of light aeroplanes, given by Major Barlow in a recent paper before the R.Ae.S., are examined it will be found that despite the relatively high weight per h.p. of small engines, the percentage of total weight represented by power plant is much smaller than is the case in the normal aeroplane. In other words, a high specific engine weight is much less important in the light aeroplane than in the normal high-powered type.

[One thing may be predicted with certainty. The successful light aeroplane engine will not be of what the British motor-car engine makers are pleased to call the "high efficiency"—in other words, the high speed small cylinder capacity—type. It is precisely the inherent lack of reliability of engines of this type which calls for all the complexity in design and care in workmanship on which Col. Fell insists.—W. H. S.]

THE BRISTOL VARIABLE TIMING GEAR.

In the report of the engine exhibits at the recent Paris Aero Show a brief reference was made to the variable timing gear fitted to the Bristol Jupiter Series V engine there exhibited. The Bristol Aeroplane Co., Ltd., has recently supplied the following somewhat more detailed account of this mechanism and of its effects.

The possibility of increasing the performance of an aero-engine at altitude by using a variable timing gear which can be worked by the pilot as the machine ascends has been realised for some time. Towards the end of the war when greater performance at altitude was urgently needed, a scheme was put forward by Mr. Ricardo.

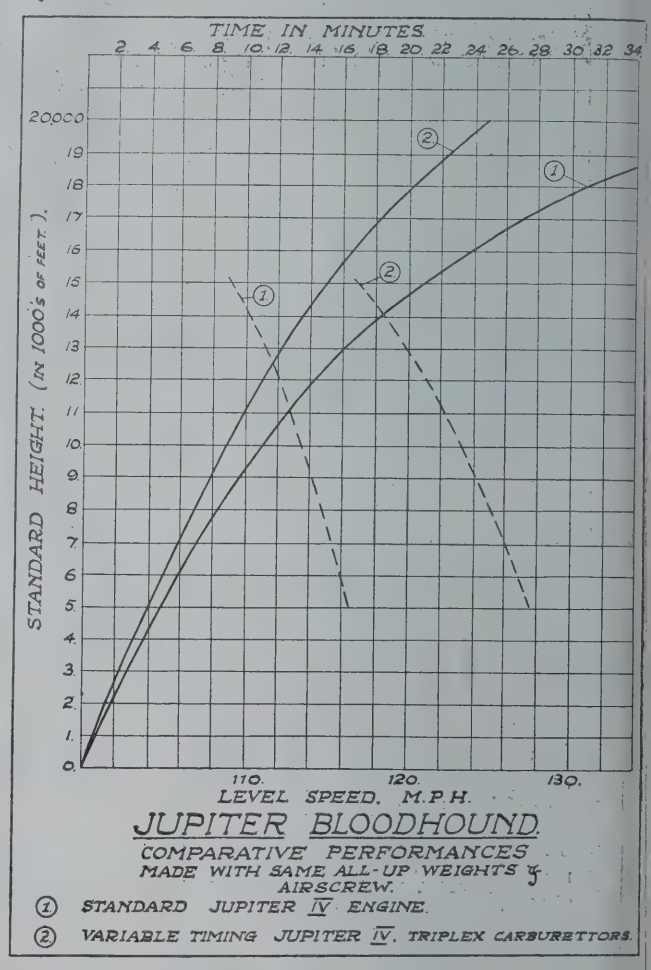
He pointed out that by using a variable timing gear in conjunction with a high-compression ratio and employing the simple expedient of closing the inlet valve late so that compression would not start until well up the compression stroke when near ground level and by gradually advancing the timing until at a predetermined altitude normal timing was reached the full ground-level power would be obtained up to the height at which the normal timing could be employed.

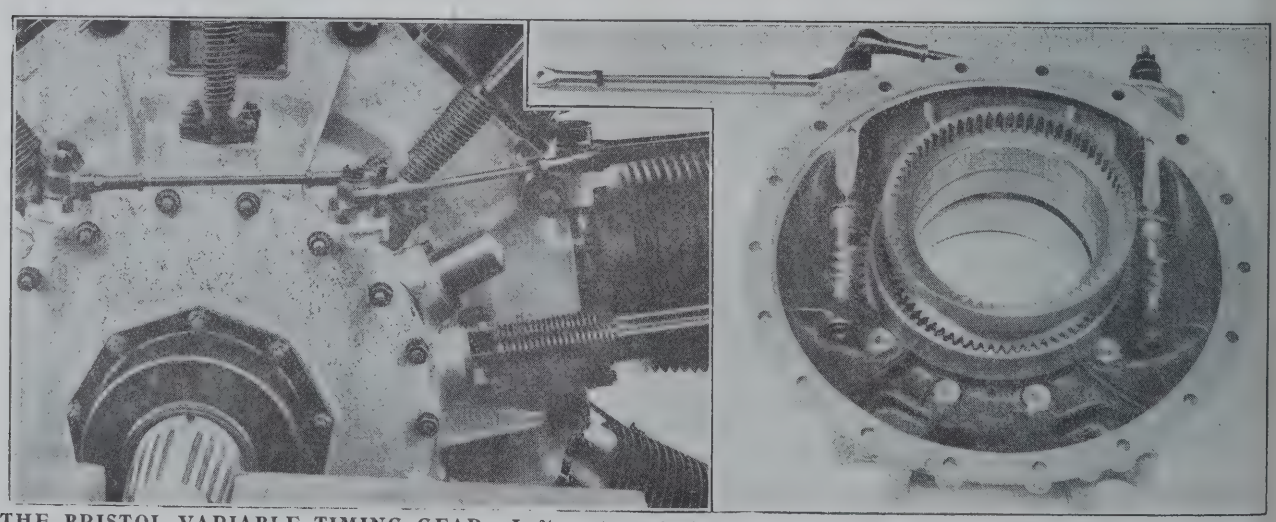
From this height onwards, the h.p. of the engine would of course fall off, as with normal-compression ratio engines, but there would be a considerable increase of h.p. available at all altitudes, and a marked fuel economy. This scheme for increasing the engine performance at altitude is far preferable to an oversize high-compression throttled engine, because certain definite advantages, such as a rising torque curve, a short compression and long expansion stroke, with no chance of pre-ignition and detonation, can be secured.

Owing to difficulties on existing conventional "in line" engines, however, this simple method of increasing power at altitude was never developed.

On the Bristol Jupiter engine it has been possible to produce a practical type of variable timing engine. The particular type of double epicyclic timing gear used makes it quite simple to arrange that the period of opening of the valves shall be easily variable while the engine is running, and also owing to the high stroke bore ratio of the engine (1.3 to 1) it has been possible to redesign the cylinder with 6.3 to 1 compression ratio without obtaining an inefficient combustion chamber.

The Bristol Aeroplane Company Ltd., have now been working on this development for the last nine months, and have obtained most excellent results both on the bench and in the air.





THE BRISTOL VARIABLE TIMING GEAR.—Left, external view of gear mounted on Jupiter engine. Right, view showing the internal mechanism.


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From the illustration given of the gear as mounted on the nose of the Jupiter engine it will be noted that it is quite simple. There is a double worm gear controlling the stationary annulus of the timing gear. No moving parts of the engine are effected, so that the reliability of the engine is not detracted from in the least, and the additional weight is only 4 lbs.

On the test bench with the variable timing retarded it was found that the engine maintained ground-level power at normal consumption, and that the gear could be operated quite satisfactorily throughout its whole range with a very slight effort.

The engine was then mounted in the Bristol Bloodhound, a two-seater fighter, with which very careful performance tests had previously been made when fitted with a standard Jupiter engine. This machine has now been flying for the past three months, during which period an extended series of tests have been carried out by the Bristol Company's Chief Test Pilot.

The results show a marked increase in performance between the aircraft when fitted with the standard Series IV Jupiter engine with 5 to 1 compression ratio and when fitted with the engine with the variable timing gear. Throughout the tests the same pilot, same weight, and same airscrew were used, and all figures have been carefully corrected, so the results are strictly comparative.

The climb and speed curves reproduced show the difference in climb and speed of the machine with the standard engine and with the variable timing engine. It will be noted that on a climb to 18,000 feet, the time is reduced by eleven minutes by the use of the variable timing engine, and at 15,000 feet, the increase in speed is 8 m.p.h.

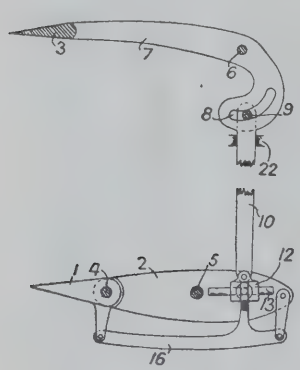
The addition of the variable timing gear has thus proved a simple and practical method of considerably improving aeroplane performance at altitudes, without adding any appreciable weight, increasing head resistance, or detracting in the slightest degree from the engine reliability. Naturally the arrangement in question has been the subject of a patent application.

AN ANTI-STALLING DEVICE.

The following abstract of a patent specification appeared in the Illustrated Official Journal of the Patent Office for Feb. 11 :—

226,516. AIRCRAFT. Rohrbach, A., 12, Ruhrstrasse, Wilmersdorf, Berlin. Nov. 27, 1924, No. 28456. Convention date, Dec. 18, 1923. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act. [Class 4.]

Balancing.—To prevent stalling in flying machines, an auxiliary surface accommodating itself to the direction of the airstream adjusts the tail plane or other surface, with increasing angles of incidence of the wings, whatever position is given to the elevator. The elevator 1 is shown mounted on the tail plane 2 which is independently pivoted at 5. An auxiliary surface 3, freely exposed to the airstream, is mounted on an arm 7 pivoted at 6, the other end of the arm having a cam slot 8 engaging a pin 9 on a rod 10 passing through guides 22. The lower end of the rod 10 is connected to a block 12 which slides on a guide 13 on the tail plane, the block being movable on the guide through a connection 16 to the elevator. At small angles of incidence no adjustment of the tail plane takes place, the lower end of the slot 8 being concentric with the pivot 6, but at larger angles of incidence of the main planes the angle of incidence of the tail plane is increased, and since upward movement of the elevator brings the block 12 nearer to the pivot 5 the automatic adjustment of the tail plane becomes more rapid as the elevator is raised, until ultimately further movement of the elevator is completely counteracted. The moving parts are balanced to eliminate inertia effects.



The description in the official abstract is not particularly easy to follow but the general scheme of Dr. Rohrbach's device seems to be as follows: The free surface, 3, of the figure tends to zero, or a small fixed angle of incidence quite irrespective of the incidence of the aeroplane itself, and the angle between the free surface, 3, and the tail plane would change exactly as the incidence of the machine changed. That is if 3 and the tail plane were parallel at zero incidence of the wings, the angle between them would become 15° when the incidence of the wings became 15°.

As the incidence of the wings increase, so also does the incidence of the tail plane. Disregarding the effect of elevators, the increased incidence of the tail plane tends to raise the tail and so restore the machine to a smaller incidence. By taking advantage of this property alone it would be possible to make a machine which could not stall, but for manœuvring purposes, and to allow the pilot to change the speed of flight at will it is practically necessary to provide elevators sufficiently powerful to overcome the tendency of the fixed tail to hold the machine at a constant angle of incidence. As a result elevators are always sufficiently powerful to produce a stall, despite the effect of the fixed tail.

If the floating surface, 3, which is, to all intents and purposes an incidence meter, is coupled to a pivoted tail plane such as is shown in the diagram, by a rigid coupling system so that the tail plane angle relative to the machine increases as the incidence increases—that is, if the surface, 3, is used to move the tail so that its incidence increases more rapidly than that of the wings, the effect of the tail in opposing the attainment of large angles of incidence will be increased. It is therefore possible, by such an arrangement, to secure that although the elevators are sufficiently powerful to overcome the fixed tail at small angles of incidence, they shall be completely overpowered by the tail plane at large angles.

But if this plan is followed in the simplest form, the elevators become less and less effective as the incidence is increased, and will become almost impotent at speeds only slightly above the stall—which is precisely when full elevator control is needed, as, for instance, in landing. Dr. Rohrbach's device is in effect a variable gear between the incidence vane, 3, and the tail and elevator controls, so arranged that the incidence vane has very little effect on the tail-plane setting at small angles of incidence, but a rapidly-increasing one at large angles—that is when approaching the stall.

This variable gearing is incorporated in two distinct parts of the appliance. The cam slot (8) in the arm, carrying the incidence vane, is concentric with its pivot (6) at its lowest end—which is occupied by the pin (9) of the coupling rod (10) at small angles of incidence. Over this part of the range changes of incidence have no effect on tail-plane setting and the full power of the elevators is retained. But as the incidence increases the pin (9) engages with a section of the slot of decreasing radius and the rod (10) is pulled up, and pulls up the tail plane.

In addition the lower end of the rod (10) is not attached to the tail plane, at a fixed radius from the tail-plane pivot (5), but can slide along a guide (13) under the control of the link (16) which is attached to an elevator lever. Pulling up the elevator tends to move the end of the coupling rod (10) nearer to the tail-plane pivot, that is, it increases the angle through which the tail plane is moved about that pivot for a given movement of the rod (10). Therefore, the more the elevators are pulled up—tending to stall the machine—the higher the gear of the tail-operating mechanism.

It will be fairly obvious that by a careful proportioning of the cam slot (6) and of the coupling of elevators to the lower end of the coupling rod (10) it can be arranged that the movement of the tail plane to counteract a stalling moment caused by the elevators can be arranged to occur with any required degree of suddenness, and to secure that, until an angle quite close to the stall is reached, the effectiveness of the elevator shall not be appreciably reduced. In fact, it should be possible with such a gear to reduce the size of tail plane needed, and to render the elevators even more effective over the normal range of flying angles.

At first sight it might be supposed that such a gear—although it might prevent stalling—would put up the landing speed to a serious extent. This need not necessarily be the case. The gear depends directly on angle of incidence and not on air speed. Some wing sections have a relatively abrupt stall, but most of those in general use have a flattened peak to their lift curve, which means that close to the stall the machine speed changes very little with change of incidence. For instance, with R.A.F. 15, the speed at 12° incidence is only about 2 per cent. higher than it is at the stalling angle, which is approximately 15°. If the gearing can be so arranged, that effective elevator control is retained at 12° incidence, but further upward movement of the elevator is entirely neutralised within the next three degrees the non-stalling effect can be produced at an increase in landing speed of about 1 m.p.h. in the average present-day machine.

On the other hand the device has the drawback of making it impossible to stall intentionally, which means that the pilot who has to pull off a forced landing in a confined space, on marshy ground, or the like, will not be able to pancake from a couple of feet or so, and stop in a few yards, but will have to make a normal landing with the risk of running into an obstacle if the space is restricted.

For heavily-loaded seaplanes, with which pancake landings are usually eminently undesirable, the device should have considerable value, but it is distinctly less attractive for land machines operating over any but unusually favourable ground.

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Official Notice.—*Election of Members*—The following Members have recently been elected:—*Fellow:* Major J. C. Stewart. *Associate Fellows:* R. V. de Aboim, K. W. Berger, E. C. Gibbons, J. D. Haddon, Major H. Hemming, F. A. Kerry, G. Lyon, J. S. L. Oswald, C. A. Pike, C. J. Sanders, Major G. H. Scott, C.B.E., A.F.C., Professor O. S. Sinnatt, S. O. Smith, C. A. Wright. *Students:* J. W. H. Barrett, J. E. Bell, W. A. Crabbs, J. C. Dodds, F. G. Evans, W. G. Kimber, I. Levy, M. A. Maude, G. S. Mills, R. L. Mills, A. J. Newport, R. S. Stafford. *Members:* C. L. M. Brown, A. G. Linney, R. F. R. Pierce, D. E. Williams. *Associate Members:* F. R. E. Davis. *Foreign Members:* H. Faillant, A. P. Loening, W. A. Yackey.

Lectures:—On Thursday, Mar. 5, Lt.-Col. C. B. Heald will read a paper on "Some Medical Aspects of Air Transport," at 5.30 p.m. in the Library at 7, Albemarle Street, London, W.1.

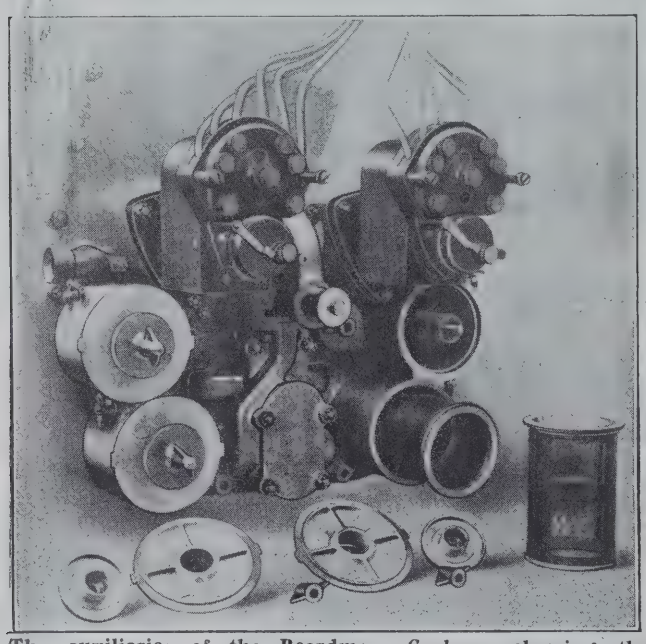
Annual General Meeting:—The Annual General Meeting of Members will be held in the Library at 7, Albemarle Street, at 5.30 p.m. on Tuesday, Mar. 30.

The Beardmore Aero Engines.

The two photographs reproduced on this page show some of the interesting features of the Beardmore heavy duty Cyclone aero-engine of 800 h.p. One indicates how it is possible to remove a piston and connecting rod unit without dismantling the entire engine.

Another shows the very neat arrangement of auxiliaries (magnetos, oil-pumps and filters) on the end of the crankcase.

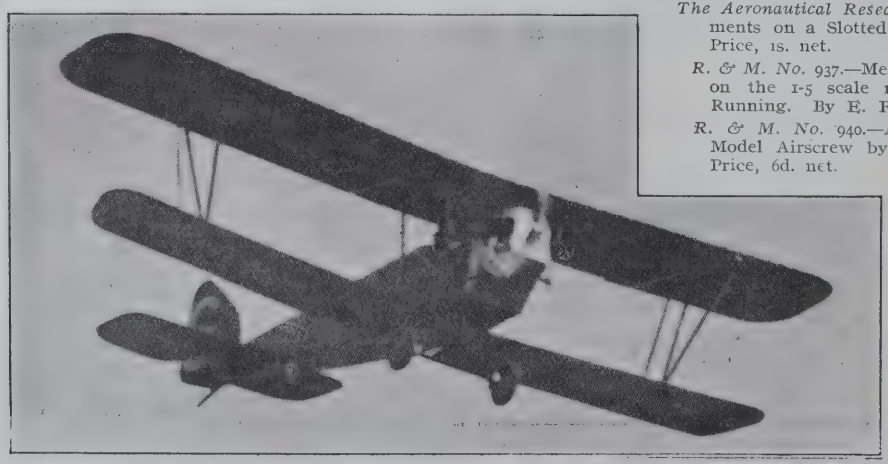
This type of engine from its simplicity, accessibility and low speed of rotation promises to be an extremely reliable power unit and as its Wt./H.P. is remarkably low, it should have a considerable future for commercial work.

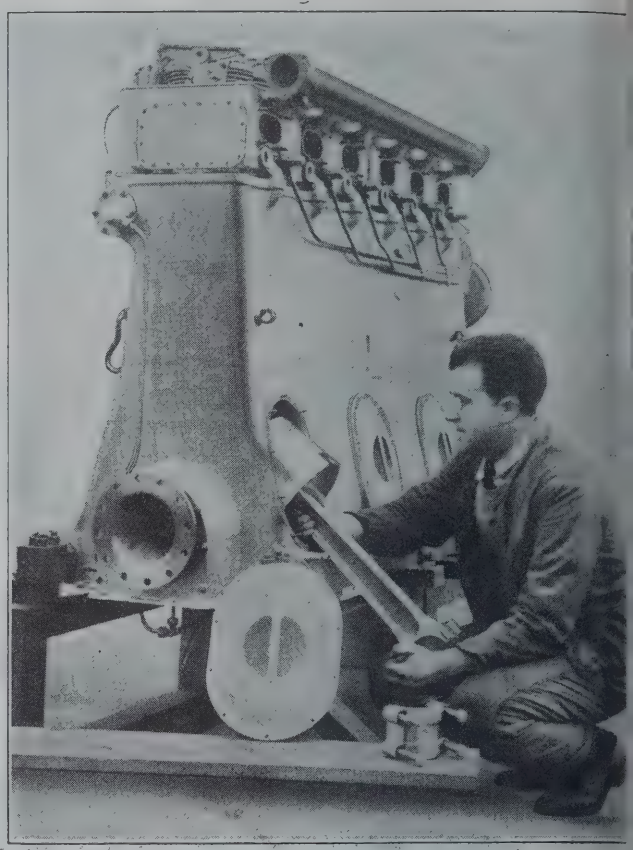


The auxiliaries of the Beardmore Cyclone showing the accessibility of magnetos and oil filters.

To Organise Output.

If any aircraft constructor who is expanding his factory under the present pressure for the delivery of aircraft happens to want a really competent works manager to organise output one can place him in touch with one or two men who are particularly well qualified for such work.—C. G. G.





ACCESSIBILITY.—Removing a piston and connecting ro from a Beardmore Cyclone engine.

Lapping Machinery.

The process of lapping by hand is one which is used to pr duce the finest and most perfect surface on metals, and, owin to the expensive nature of the work it can only be employe upon gauges, and precision instruments. In order to perm of the production of surfaces of the same degree of finish an accuracy on goods which will not bear the cost of han lapping, the Bethell-Player Co., of Westboro, Mass., U.S.A have produced a very simple but ingenious lapping machin which permits the lapping of flat and cylindrical surfaces i quantity at very low cost, and renders it possible to finis at least small parts such as gudgeon pins, and the faces piston rings to a limit of accuracy much greater than th attained by grinding.

The British licensees for the machines—Bethell, Play and Co., of 17, Philpot Lane, E.C.3—have just issued a sma pamphlet describing these machines and their methods operation which should be in the hands of all those who a concerned with the production of highly accurate metal-wor

New Technical Literature.

The Journal of The Royal Aeronautical Society, No. 170, Vol. XXI February, 1925.—Contents. Notices: Associate Fellowships: Th Beneficence of Atmospherics, by R. A. Watson Watt: Cayley Airships: The Use of the Wind Channel to Aircraft Designer The Reaction of a Stream of Viscous Fuild on a Rotating Circul Cylinder, by Major A. R. Low. Price to non-members, 2s. 6d. n

The Aeronautical Research Committee R. & M. No. 929.—Some expe ments on a Slotted Aerofoil. By H. B. Irving and A. S. Bats Price, 1s. net.

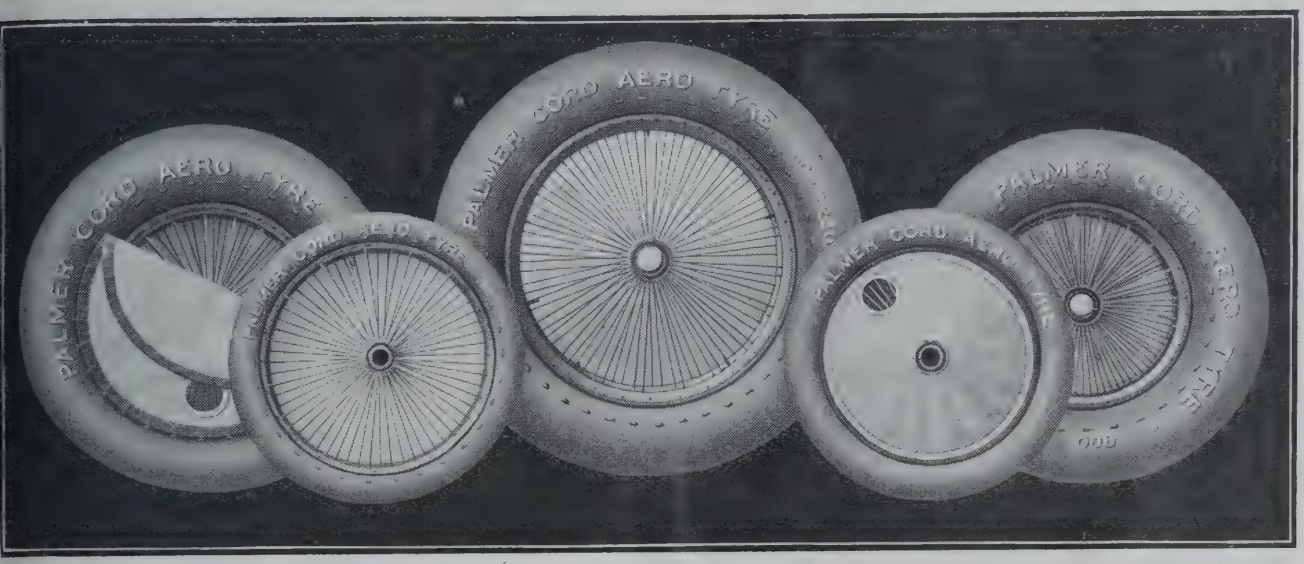
R. & M. No. 937.—Measurements of Lift, Drag, and Pitching Mome on the 1-5 scale model of the Bristol Fighter with Airscr Running. By E. F. Relf and L. J. Jones. Price, 1s. net.

R. & M. No. 940.—An Analysis of the Pressure Distribution on Model Airscrew by means of the Vortex Theory. By A. Fa Price, 6d. net.

The Broadsmith B.4 biplane (A.C Scorpion engine) which, flown by C Percival, won first prize in the Austra Light Aeroplane Competitions at R mond, near Sydney, in December 1

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300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 9; Wednesday, 11, Thursday, 12; Friday, 9; Saturday, 10; Sunday, 4.

Imperial Airways, Ltd.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterraw—Amsterdam—Berlin: Machines 37, passengers 68, freight 6 tons.

Air Union:

Paris—London: Machines 17, passengers 31, freight 9 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 13, passengers 21.

Deutscher Aero Lloyd:

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 37, carrying 68 passengers. Foreign machines: 30, carrying 52 passengers.

Comparative Figures:

For week ending Feb. 22:

Machines, 67; Passengers, 120; Crews, 84; Total personnel, 204.

Corresponding week, 1924:

Machines, 68; Passengers, 113; Crews, 113; Total personnel, 226.

Corresponding week, 1923:

Machines, 42; Passengers, 102; Crews, 76, Total personnel, 178.

Corresponding week, 1922:

Machines, 45; Passengers 81; Crews, 74; Total personnel, 155.

Corresponding week, 1921:

Machines, 30; Passengers, 32; Crews, 38; Total personnel, 70.

Croydon Notes.

There has been plenty of flying during the past week at Croydon. Sixty-seven complete trips have been made and for the first time for a good many weeks more than a hundred passengers have been carried and the goods traffic is still large.

The fence at the North end of the aerodrome is now flat on the ground. Whether this is part of the aerodrome enlargement scheme in operation or is the result of much gold-carrying by Imperial Airways, Ltd., one does not know.

The aerodrome is now quite a pretty sight at night. The whole of the landing area is surrounded by a number of red winking lights which operate throughout the hours of darkness.

So far as can be gathered Imperial Airways, Ltd., will only be able to put three new types of machines on the service this year, and moreover only one of each type will be available. The Avro freighter and the D.H.54 should be ready next month at the latest and the Handley Page with three Jaguars will be ready in June. The all-steel Armstrong-Whitworths are not likely to be finished much before next February at the earliest and so presumably the D.H.34s, the W.8bs, the Vimy, the Vulcan, and the D.H.50 will be used for another year. The Vimy is five years old, and the others, with the exception of the D.H.50, are all about three years of age.

The D.H.50, which was damaged a week or so ago in a forced landing in Germany, has now arrived back safely and is again flying on the service.

Mr. Leverton has provided one with some interesting data with regard to K.L.M. During last year, on the outward journeys from London only, 717 passengers were carried in 265 machines, and there was only one forced landing due to mechanical trouble and only one service had to be cancelled for mechanical trouble. This is a very good record and speaks very highly for the Croydon organisation of K.L.M. and is a tribute to the combined reliability of the Fokker machines, the Rolls-Royce Eagle IX, and the Siddeley Puma.

A somewhat alarming incident occurred on Friday, which might have had serious results. When the Pratt's petrol lorry was unloading the engine suddenly caught fire, but fortunately it was seen at once and the fire was extinguished before there was any chance of it spreading to the 500 odd gallons of spirit on the lorry. It will be recollected that the B.P. hut caught fire some time ago, so that it is now considered up to Mr. Shaw to have a Shell fire. Mr. Shaw points out that he considers that this at any rate is proof that the fuel of his rival companies is inflammable.

The Surrey Flying Services still continues to do a large amount of photographic work. They are waiting for a suitable day to come over London to take the new 2LO aerial on the roof of Selfridge's. Recently they have been taking new photographs of the aerodrome in connection with the enlargement scheme.

The Aircraft Disposal Company, Ltd., have had their Avro-Airdisco flying a lot during the week and in addition to Mr. Perry it has been flown by Col. Barker, Major Scott, Mr. Muir and Mr. Broad.

The A.D.C. are very busy with the production of the Airdisco and Cirrus engines. One of the latter has been installed in the De Havilland Moth and this machine made its first flight at Stag Lane on Sunday, piloted by Capt. de Havilland, and one is told that another Cirrus has gone to the Supermarine Aviation Works, Ltd., where it will be installed in the Sparrow, which Mr. Biard flew at Lympne with a Blackburne.—G. D.

Air Mails.

The Postmaster-General announces that, beginning on Friday, Feb. 13, and on each Friday thereafter until further notice, a new letter Air Mail will be despatched from this country by Union Castle Packet, for onward conveyance from Capetown by the experimental Air Mail service which the Union Post Office is about to institute between that place and Durban. The Mail aeroplane will be due to leave Capetown each Monday, beginning on Mar. 2, immediately after the arrival of the Packet, and to reach Durban the same day, calling on the way at Mossel Bay, Port Elizabeth and East London. It is to return from Durban (calling at the same points) in time to connect with the homeward Mail Packet sailing from Capetown each Friday. By the use of the Air Mail letters from this country for Mossel Bay, Port Elizabeth, East London and their respective districts, and for Durban and probably the whole of Natal, should be saved up to one or two days in time of transmission; and addressees in Durban should be afforded an interval from Tuesday to Wednesday, or to Thursday inclusive, in which to reply either by return ordinary, or by return Air Mail.

Any letter intended for transmission by the Air Mail must bear in the top left-hand corner of the cover the official blue Air Mail label (or be plainly marked in manuscript "By Air Mail"), and must be prepaid in postage stamps in the usual way with a special fee of 6d. per oz. in addition to the ordinary Imperial rate of postage. It may be posted, subject to observance of these conditions, in any of the ordinary ways of posting; and it may be registered, but not insured. The official blue Air Mail label will be supplied free of charge on application at any Head or Branch Post Office.

The latest times of posting (including late fee posting) for the new Air Mail will be generally as advertised for the ordinary post to South Africa, but there will be no late fee posting in London at Waterloo Station on Fridays for the Air Mail. Late fee letters must be prepaid with the appropriate late fee in addition to the Air Mail fee.

Cape Town—Durban Experimental Mail Service

An experimental air-mail flight was made on Feb. 23 between Durban and Cape Town, mail bags being picked up en route at East London, Port Elizabeth, and Mossel Bay. The distance, of approximately 900 miles, was accomplished in 11¾ hours, as against 10½ hours, which was the scheduled time. The machines used were D.H.9s belonging to the S.A. Air Force and the weather conditions were unfavourable.

The regular mail service will begin operations in March and will operate to coincide with the arrival and departure of the English mail boats for a period of three months.

The whole of the active S.A. Air Force, i.e., 10 D.H.9s (Siddeley Puma engines) will be used in relays, and it is hoped that three months' operation will supply useful data for a regular commercial passenger and mail service.

The ZR.3. to Bermuda and Back.

On Feb. 23 the Z.R.3, or *Los Angeles,* left Lakehurst at 03.40 hours and flew to Bermuda, a distance of 676 miles, in 12 hours. Owing to a high wind no attempt was made to moor to the mast of the U.S.S. *Patoka,* and after circling round for several hours, turned westwards, and returned to Lakehurst.

Capt. Steele, U.S.N., was in command of the ship, and in addition to Capt. Klein, U.S.N., and a crew of forty, the passengers included Mr. Robinson, Assistant Secretary of the Navy, and Rear-Admiral Moffett, Chief of the Bureau of Naval Aeronautics.

The ship carried 200 lbs. of mail which was dropped in front of Government House, but owing to weather conditions the plan to pick up mails was abandoned.

A further attempt to fly to Bermuda and moor there to the *Patoka's* mast will be made at a later date. Flights with mail to Porto Rico and Panama, as well as a round trip to this country, are contemplated before the end of the coming summer.

Sand.

Now that the Aircraft Industry is returning to the stage in which aircraft and aero-engines are being built in properly organised factories constructors of both engines and aeroplanes will find con-

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Receivership (Appointment).

BRITISH ANZANI ENGINE COMPANY, LTD.—H. Button, C.B.E., Chartered Accountant, of 61 and 62, Lincoln's Inn Fields, W.C.1, was appointed Receiver and Manager on Feb. 16, 1925, under powers contained in debentures dated Dec. 23, 1924.

PERSONAL NOTICES.

DEATH.

CRUIKSHANK.—On Feb. 20, at Baghdad, of typhoid, Sq. Ldr. Jasper Cruikshank, O.B.E., R.A.F., loved husband of Aileen Cruikshank, of 20, Hartington Mansions, Eastbourne.

Sq. Ldr. Cruikshank has been in command of No. 6 Armoured Car Coy., R.A.F., at Hinaidi, Iraq, since Nov. 3, 1922. He was posted to Iraq after 12 months with No. 4 F.T.S., Palestine, in the spring of 1922. Previous to this he was on Stores Staff Duties at H.Q., Middle East, Cairo. He was gazetted Sq. Ldr. on Aug. 1, 1919.

MARRIAGES.

ANDERSON—CHAMBERLAIN.—On Feb. 21, at Tarrytown, New York, Flg. Off. D. F. Anderson, D.F.C., No. 1 Sqdn., R.A.F., son of the late David Paterson Anderson and Mrs. Anderson, "Avoca," Farnborough, Kent, to Alma Birge, daughter of the Rev. and Mrs. William I. Chamberlain, Tarrytown, New York.

BOWEN-BUSCARLET—MONTAGUE.—On Feb. 21, at the Parish Church, Marwood, Barnstaple, Mr. Willett Amalric Bowen-Buscarlet, R.A.F., only son of Mr. and Mrs. F. C. Buscarlet, of Newcastle, to Miss Violet Mary, eldest daughter of the late Mr. J. M. Montague and of Mrs. Montague, of Broom Hill, Barnstaple.

EVENS—WHITEHEAD.—On Feb. 21, at St. Pancras Church, London, Flt. Lt. H. W. Evens, R.A.F., eldest son of Mr. and Mrs. W. Evens, of Westcliff-on-Sea, to Jean, youngest daughter of Capt. and Mrs. Ralph Whitehead, of Blyth, Northumberland.

PHILLIPS—SAYER.—On Feb. 7, at the Pro-Cathedral, Sault-Ste-Marie, Ontario, H. J. Phillips (late Lt., R.F.C., R.G.A.), now of the Ontario Provincial Air Service, eldest son of Major and Mrs. W. J. Phillips, Ash Bank, Ash Vale, Surrey, to Irene Ora, younger daughter of Mr. and Mrs. E. J. Sayer, of Birmingham.

BIRTHS.

GREIG.—On Feb. 21, at Ladder Stile, Kingston Hill, the wife of Wing Commander Louis Greig, C.V.O.—a son.

WINCH.—On Feb. 1, the wife of Hubert Edward Winch, of Eaton House, Eaton Rise, Ealing, late R.F.A. and R.A.F.—a son.

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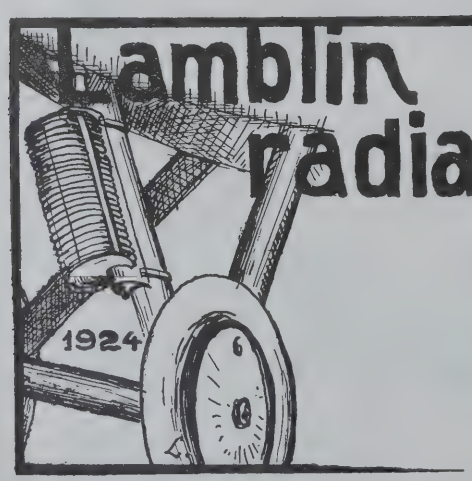
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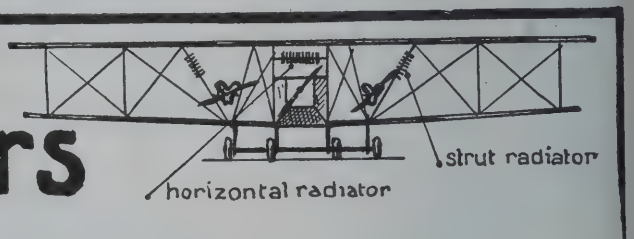
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THE BIG MATCH.—An incident in the match between the R.A.F. and the Royal Navy on Feb. 25. The R.A.F. won by a penalty goal to nothing.

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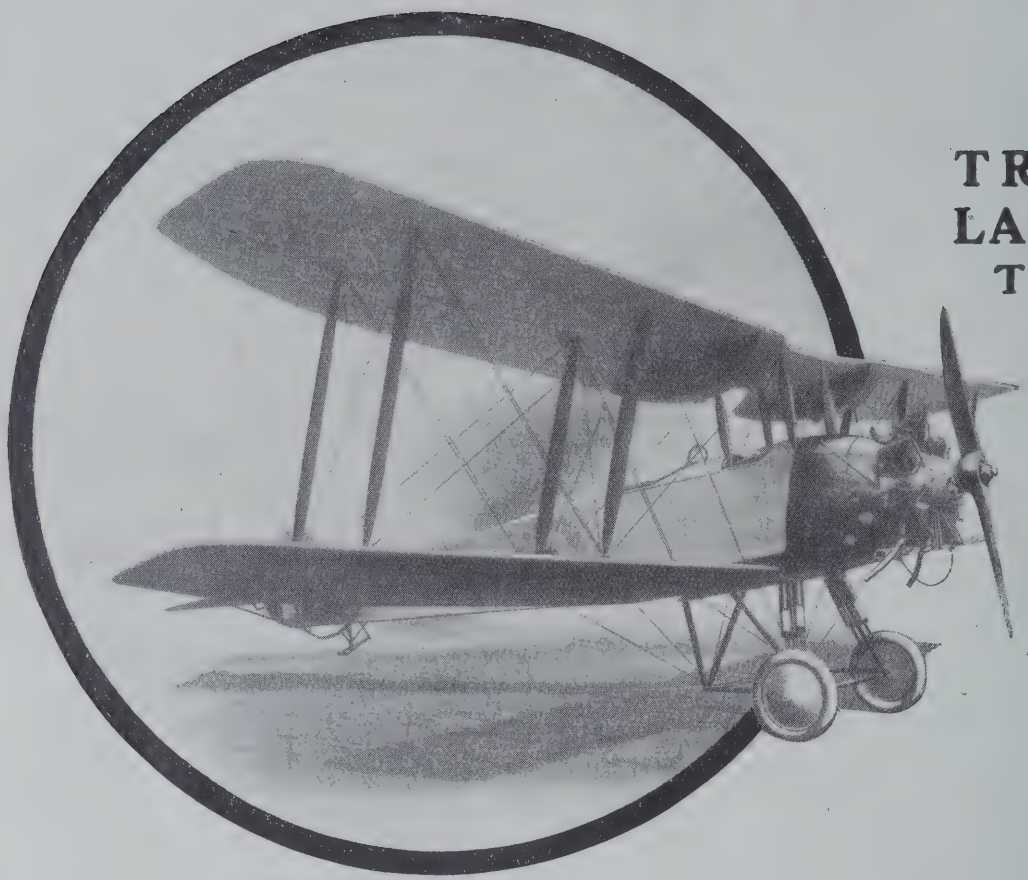
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ON THE RUSSO-JAPANESE TREATY.

Readers of THE AEROPLANE will remember that at various times during the past year and a-half references have been made in THE AEROPLANE to the existence of an understanding between Soviet Russia and Imperial Japan. It was alleged in this paper that the understanding was at least as intimate as was the Entente Cordiale between Republican France and Imperial Britain before the outbreak of War in 1914 and the suggestion was made that a secret treaty might even exist. It is therefore of interest to see the development of what has been styled a crazy idea.

To give credit where it is due one would like to state that the existence of such an understanding was first brought to one's notice by Mr. E. J. Harrison of the Lithuanian Legation in London, whose book, *The Red Camarilla*, though ostensibly a sensational novel, is in fact a disguised political treatise. Since the appearance of that book various sidelights have indicated the existence of such an understanding or treaty.

It is therefore the more interesting to learn that the Berlin *Lokalanzeiger* of Feb. 14 has published details of alleged secret clauses which are said to be included in a Russo-Japanese-Chinese Treaty which was signed at Pekin on Jan. 20.

SECRET CLAUSES.

The Sunday Express gives the following details of the secret clauses :—

In the event of Great Britain, France, and the United States undertaking military operations against the Central Chinese Government or anywhere in Chinese territory, Russia will place at the disposal of China 200,000 troops, who are to be armed, equipped, and maintained by Japan.

Russia, on her part, abandons 50 per cent. of her claims to the Chinese Eastern Railway.

The entire territory of the Island of Saghalien, including also the northern part, is to revert to Japanese ownership after five years, provided that Japan has in the meantime furnished Russia with four small cruisers, one battleship, thirty submarines, and seven destroyers, which are to be constructed in Japanese shipyards.

Russia has reserved the right to demand sufficient oil from the Saghalien wells.

Vladivostok is to be transformed into a naval base of the first class, with the co-operation of Japan, who is to provide 60 per cent. of the cost of reconstruction.

Russian and Japanese officers and instructors are to undertake the training of the Chinese Army, which is to have a peace strength of 800,000, the Russians to be responsible for the northern section and the Japanese the southern.

In Western China a special "Indian and Tibetan Corps" will be formed.

China agrees to purchase weapons and other military equipment only from Russia and Japan, 25 per cent. from Russia and 75 per cent. from Japan.

The treaty extends for a period of thirty years, and lays down lines to be followed for the entire military, political, and economic policy for the three countries—Russia, Japan, and China.

PERSONAL EXPRESSIONS.

The Sunday Express adds that the Treaty was signed by Mr. Karakhan, the Soviet Envoy, and Mr. Yoshizawa, the Japanese Minister, and states further that Mr. Tchitcherin, the Soviet Foreign Minister, said afterwards :—

"The treaty is more than an ordinary settlement of the differences between both countries. It is going to mark a turning point in international politics, especially in the Far East."

Furthermore the *Express* remarks that Chang Tzo-lin, the War Lord who dominates China, with its 400,000,000 inhabitants, is an old protégé of Japan, and has of late been on extremely friendly terms with the Soviet.

A Reuter message from Berlin dated Saturday, Feb. 14, states that the Japanese Embassy has issued an emphatic denial of the report issued by the *Lokalanzeiger*. This of course was only to be expected, as it is the custom of every country to deny the existence of secret clauses in treaties until the outbreak of war demonstrates that such clauses did in fact exist.

The Times of Feb. 23 published an article by its Peking correspondent on the Soviet Treaty with Japan. This article occupies approximately a column and a-half, which indicates the importance attached to the Treaty by those who control our leading newspaper.

THE MEANING OF THE TREATY.

The direct importance of this Treaty to all concerned with aircraft should be obvious. But one may as well give a little explanation of its importance for the benefit of those who have not studied the direct connection between higher international politics and such movements on a lower plane as the promotion of pilot officers and better employment in the Aircraft Industry.

The essential fact is that a Russo-Japanese Treaty means sooner or later war in the Pacific. None can accuse THE AEROPLANE of not having educated its readers to a proper understanding of the factors which make towards the next war. But hitherto there has been no outstanding fact with a definite date to make as it were a milestone on the road towards the next war.

This Treaty is definitely such a milestone. It means that Russia and Japan together control China. It means that England and the United States are definitely excluded from selling armaments to China, which means that whatever aircraft are needed for the Chinese Army which is to be organised by the Russians and Japanese together will be bought from Japan and Russia and not from England or America. This again means increased factory space and therefore increased capacity for expansion of output in case of war in the Russian and Japanese aircraft factories.

Assuming that the alleged secret clauses are stated with approximate accuracy by the *Lokalanzeiger* the treaty means that Vladivostock will be organised as a great naval and air base on the flank of any American attack on Japan along the line of the Aleutian and Kurile Islands.

An interesting point in this connection is that the Treaty opens for Japan an easy method of getting round the limitations imposed on the Japanese Fleet by the Washington Agreement. Russia has no Navy and no shipyards capable of building modern warships. Therefore Russia, as stated in the alleged secret clause, has to buy her Vladivostock fleet from Japan. This means not only an increase in the shipbuilding capacity of Japan but in fact actually increases the Japanese Navy over and above the complement under the Washington Agreement by precisely the number of ships built for Vladivostock for these ships will be to all intents an addition to Japan's fleet.

Apart from that the extra accommodation in the shipyards necessary to build those ships for Russia means increasing the capacity of those shipyards for building warships immediately before and during the War.

Also it is well to remember that Russia was not a party to the Washington Agreement and therefore Russia can go on ordering warships from Japan as fast as she can pay for them, or as fast as the Japanese are prepared to give credit for them, and so can accommodate at Vladivostock what will practically amount to a Japanese reserve fleet actually bigger than the fleet allowed under the Washington Agreement. And with such a fleet there must go a correspondingly large fleet air arm equipped with aircraft built in Japan.

Thus it may be seen that between the new Russo-Japanese Fleet and the Russo-Japanese-Chinese Army there will be an enormous increase in the construction of aircraft in Japan and Russia.

The whole scheme is remarkably clever, and like all big ideas is remarkably simple. The cuteness displayed in thus getting round the Washington Agreement for the limitation of naval armaments is typical of square-head mentality.

We know that the Japanese can build good warships. In fact according to Mr. Hector Bywater, who is recognised as our leading writer on warship design and construction, modern Japanese warships, including their equipment of guns and torpedoes, copied from English designs so far from being mere slavish copies do in fact embody alterations which are definitely improvements on the originals.

THE CASUS BELLI.

The reaction of this Treaty between the Yellow nations on the White nations must necessarily be in the direction of increasing fighting forces. The nation primarily interested is certainly the United States, for the exclusion of American

commerce from China under Russo-Japanese influence is precisely the kind of thing which has been the basic cause of many wars, if not the majority of wars, in the past. But the British Empire is certainly no less affected ultimately by the Treaty than are the United States. Great Britain runs most of the shipping and consequently most of the commerce in the far East and any interference with trade in China makes for war with England just as definitely as it makes for war with the United States.

There need be no official prohibition of American and English goods in China. The Japanese are probably too clever to insist on any such clumsy cause of offence. The initial difficulties will probably occur in Chinese Customs Offices and in unpleasant incidents in connection with Chinese business houses dominated by Japanese.

The actual cause of war may be merely a private fight between Japanese and Americans or Japanese and English in a Chinese sea port. But there is all the makings of a first-class war in the effects which are bound to follow such a Treaty.

The Open Clauses.

As a matter of historical interest the summary of the Treaty published in *The Times* on Feb. 23 is produced hereafter for the benefit of those who have not already seen it. It reads as follows :—

The Treaty consists of a convention of seven articles, two protocols, and various notes and declarations. In the absence of the text it is difficult to state the exact meaning of some of the articles, and the following summaries may have to be revised when the documents are published.

With regard to the Articles of the Convention, the first re-establishes diplomatic and consular relations upon exchange of ratifications. By the second Soviet Russia recognises the validity of the Portsmouth Treaty, and it is agreed that all other treaties concluded before 1917 shall be revised or cancelled at a future conference. Article III. provides for the revision of the Fishery Convention of 1907, pending which the procedure established in 1924 relating to fishing leases shall be maintained.

Article IV. provides for the conclusion of a Treaty of Commerce and Navigation in conformity with the following principles which shall apply to general intercourse until the Treaty is formulated :— (1) The nationals of each country shall have liberty, in accordance with the laws of the respective countries, to enter, travel, reside in, and enjoy protection of life and property; (2) each party shall grant the nationals of the other, in accordance with their respective laws, the right of private ownership and liberty to engage in commerce and other peaceful pursuits; (3) neither party shall discriminate against the other by prohibition, restriction, or impost which may hamper intercourse, the intention being to place the commerce, etc., of each country on the most-favoured nation footing.

According to Article V., both parties affirm their intention to refrain and restrain all persons in Government service and all organisations in receipt of official financial assistance from any act liable to endanger order and security in any part of each other's territory, and, further, neither party shall permit the presence in its territory of (*a*) organisations pretending to be the Government of any part of the territories of the other, or (*b*) of aliens who may be actually carrying on political activities for such organisations.

By Article VI the Soviet Government agrees to grant concessions to Japanese subjects for the exploitation of minerals, forests, and other natural resources in Soviet Russia. The ratification of the Convention is provided for by Article VII.

As in all the arrangements made with the Soviet Government by other Powers, the value of the Treaty with Japan depends upon future negotiations in regard to vital points. Diplomatic relations will be restored when the Treaty has been ratified by both parties, which is expected as soon as the documents reach Moscow. But debts have still to be discussed and the conditions defined under which Japanese may trade, mine, and otherwise engage in enterprise in Russian territory.

The protocols deal chiefly with the subsidiary but no less important subjects of debts between the Russian and Japanese Governments, the withdrawal of Japanese troops from Saghalien, the granting of oil and coal concessions in Saghalien and so forth.

Light Relief.

Just as a sidelight on the humours of history one cannot refrain from publishing the opening remarks of the Peking correspondent of *The Times* describing the actual ceremony of signing the Treaty.

The occasion of the signing of the Russo-Japanese Treaty was quite a picturesque affair. The Japanese Minister, in consequence of a skating accident, was bed-ridden and conducted the concluding negotiations in a reclining position attired in an elegant kimono. The Russians were anxious to have the Treaty signed and the fact blazoned in Moscow on the anniversary of the death of Lenin. Accordingly, furious efforts were made on Jan. 20 to settle all the points at issue. By 7 in the evening agreement was complete except as regards the propaganda clause, but, after further discussion, this remaining difficulty was duly removed.

It was not until after 2 a.m. on Jan. 21 that the documents were all prepared and the secretarial staffs and a large crowd of journalists assembled in the library, where Mr. Yoshizawa's bed had been wheeled, to witness the culmination of negotiations that had been proceeding intermittently for three years. Ambassador Karakhan held his pen aloft while two of his staff adjusted their cinema apparatus ready to catch him in the act. An enterprising Japanese correspondent did the same for Mr. Yoshizawa, and it was a comparative trifle that a good carpet was well burned in the process by droppings from a blazing magnesium wire.

Altogether it was quite a jolly and fraternal function, and if the smoke from the flashlights made the onlookers cough and sneeze the contents of the bottles hospitably provided soon restored their throats to normal. No copies were given out, but the substance of the documents was read over and correspondents were permitted to make what notes they could. It was nigh on daylight before some of the more diligent were able to leave the scene.

All tragic incidents have their comic aspect and the representative of *The Times* is to be congratulated on having given this touch of light relief to an occasion the consequences of which will ultimately affect very materially the private affairs of all readers of this paper.—C. G. G.

THE ANGLO-FRANCO-GERMAN PACT.

By a curious stroke of fate, on March 3rd, the morning on which this number of The Aeroplane goes to press, the daily newspapers have published more or less detailed particulars of a proposed Anglo-Franco-German pact, which may well develop into a definite League of the White Nations against the Yellow, and a direct reply to the Russo-Chino-Japanese Treaty reviewed above.

Those who have hitherto regarded the opinions of The Aeroplane on World-politics as merely the outpourings of a mind disquieted by racial prejudices may be induced to consider such opinions more seriously if they will read the following extracts from *The Morning Post*, which is usually well-informed on any facts directly concerning a Conservative Government. *The Post* remarks that it believes the statements to be substantially correct. The essential points have been emphasised by printing them in italics :—

The *Chicago Tribune* published in Paris yesterday an important message from its London correspondent, Mr. John Steele, in which he outlines a new orientation of British political ideas.

A secret memorandum expounding the principles of British policy in view of the new situation in Europe has just been circulated among members of the Cabinet, Ambassadors, and other high officials by Mr. Austen Chamberlain, the Secretary for Foreign Affairs. So far no one outside the Cabinet and diplomatic circles is aware of the existence of this document, of which the *Tribune* is able to give a synopsis.

For the first time for over ten years a document has been drafted which sets forth the definite lines on which British action in international affairs will be conducted.

The Memorandum.

The memorandum begins by setting forth the main factors to be considered for British security. All else is secondary.

The position in Europe, he says, is full of uncertainty and incalculable danger. *The only possible British policy is to consult British interests,* leaving the League of Nations at some future time to develop into an instrument for international peace.

It is clear, he goes on, that the policy of isolation preached by some insular minds is out of date. *Aerodynamics have transformed the Channel from a barrier of great military importance into a mere ditch devoid of all military value.* It is therefore a matter of supreme importance to prevent any continental power from obtaining control over the whole coastline.

Britain Open to Attack.

If Germany invades France or Belgium a situation will be created in which Britain would be open to attack by air, therefore it is of supreme moment to guarantee France and Belgium against any possibility of such a thing happening.

To follow a policy of isolation in European affairs is all right for the United States, which is safe behind two oceans, but for Britain it would mean proclaiming impotence and inviting attack. The situation of France and Belgium must be considered from the viewpoint of British security alone, but whatever has to be done must be done publicly, for it was the secrecy of the pre-war Franco-British arrangements that allowed Germany to embark upon war.

If in 1914 Germany had known that the British Empire would assist France against any invasion of her territory and that any infringement of Belgian neutrality would necessarily bring about immediate British action, there would have been no war.

When Great Britain and the United States refused to ratify the Security Pact, they created insecurity in Europe, and *France was forced into a policy of adventurous expeditions.* Instead of being able to concentrate on economic reconstruction, which would have allowed her to pay her debts, *she had to organise Europe into an armed camp* to oppose the rise of a spirit of revenge in Germany against which she regarded herself as safeguarded only by the temporary expedient of the Rhineland occupation.

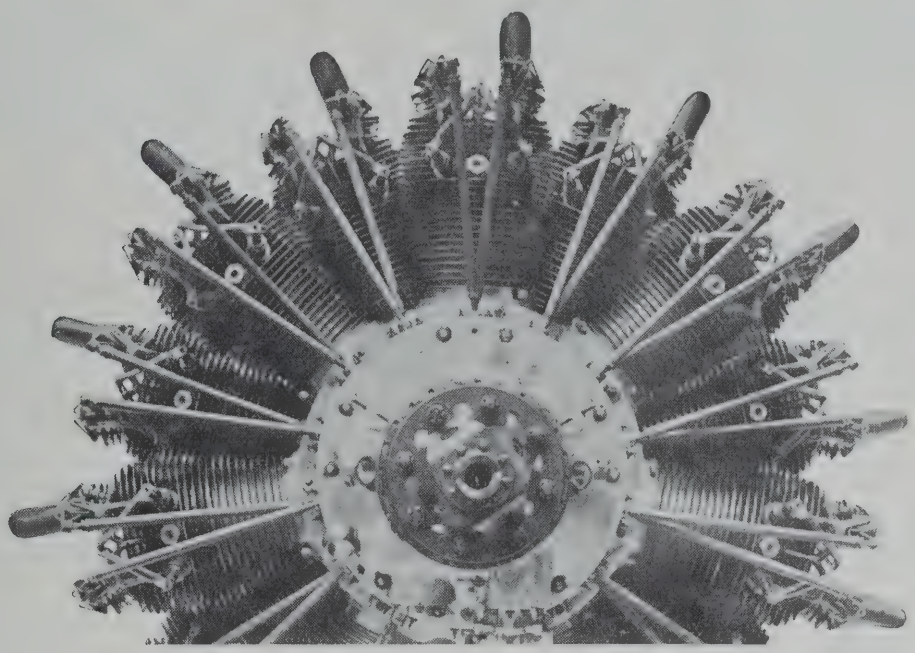
Germany Recuperating.

Germany was not destroyed by the war, and she is recuperating. *To destroy the feeling of revenge in her, she must be brought into the comity of European nations and made to co-operate* as a member of the League of Nations. This cannot be done without the goodwill of a pacified France. To pacify France and allay her justified fears it is essential to give a measure of guarantee that her territory will not be invaded with impunity.

But the British Empire must give a definitely limited promise of guarantee, which she will be prepared to keep at any cost, rather than vague general promises which could only do harm.

When Western Europe is pacified similar action may at some future time be carried further, but only when the Germans and the Poles have been brought to see the necessity for co-operation can peace be brought to Eastern Europe.

Russia hangs like a shadow on the horizon. She has ceased to be



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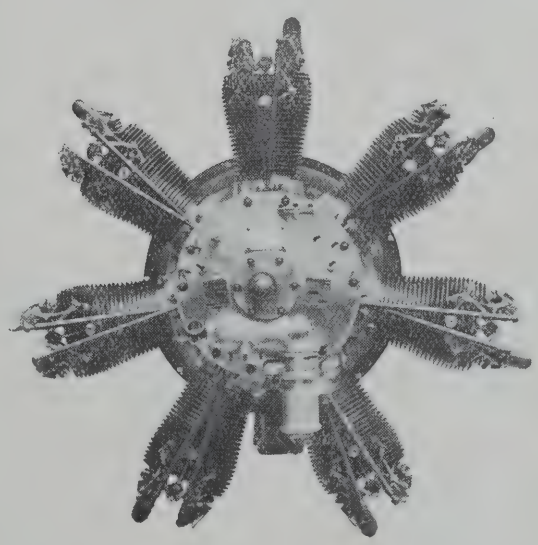
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Oil consumption, ·03 pts./b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
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European, and none can say what she does represent, but it is clear that European salvation must be worked out without waiting till that great country finds herself.

There you have in the most Parliamentary language just what this paper has been preaching for years. A Pact, which will develop into a Treaty, must be made between England, Germany and France. And the alliance of those nations is necessary because of the danger from Russia, which has not "ceased to be European" because she never was European.

So long as a run-to-seed Nordic aristocracy existed in Russia it was possible to make diplomatic deals with that nation as if she were European, but now under a square-head oligarchy she is outside the comity of White Nations and can only be treated as a natural enemy.

Gradually, little by little, the White peoples are discovering that the Russians are "coloured folk" and should be treated as such. And the time will come when the sight of a white woman associating with a Russian will appear as revolting as if she associated with a Chinaman or Nigger. Those who remember the aversion with which naturalised, or even British-born, Germans were regarded from 1914 to 1922 or so will do well to point this out to those "colour"-blind people who treat Russians as social or racial equals.

At any rate, this latest official act shows that everything is steadily working up towards the genuine race-war which regular readers of The Aeroplane have been asked to study during the past several years.—C. G. G.

ON THE AIR DEBATE.

On Thursday, Feb. 26, Sir Samuel Hoare, Secretary of State for Air, introduced the Air Estimates for 1925-26 to the House of Commons. His task was difficult in that he had little new material for his speech and so was obliged to reiterate a great deal of what he had said in his various speeches during the past two years, yet, as is his custom, he was always interesting. Moreover though Sir Samuel had the satisfaction of knowing that his proposals would meet with no opposition worth mentioning the mere absence of opposition deprived him of the opportunity of making one of those fighting speeches in which he shows at his best.

Hereafter follows the most condensed possible version of the proceedings. Sentiments rather than words have been reported. In order to avoid confusion on the part of British and foreigners who have difficulty in understanding the English language one has placed all editorial comments in brackets.

The Air Minister's Speech.

In his introductory speech Sir Samuel said that the grant-in-aid from the Admiralty for the expenses of the Fleet Air Arm did not in any way deprive the Air Ministry of its undivided responsibility for all air development. He said the grant produced an effective increase in the Air Estimates of £1,972,000.

He stated that there had never been such unanimity amongst the leaders of all parties upon any question of defence and that the Government were carrying through a programme of trebling the combatant strength of the Air Force as compared with its strength when he last came into office. He also said that we had almost reached the limit of our war stocks and as a result had been forced more and more to buy new equipment. This meant more cost to the taxpayer because he found that both here and in France aircraft materiel cost about 100 per cent. more than the old types.

Referring to war in general Sir Samuel said that he had never believed that Europe will be so mad as to involve itself in a war which may destroy civilisation and he suggested to the House that the less the peoples of Europe allow their morbid imaginations to play upon the possibility of the next war the less likely that war will be. We ourselves, he said, are in the particularly fortunate position of being surrounded by old friends and allies and need not panic or adopt exaggerated measures for developing a scheme of defence that is none the less necessary to our national security and status. He advised us rather to take a healthy and sustained interest in a problem of defence that must be faced by any great empire.

[This is a most important pronouncement. It is evidently Sir Samuel Hoare's polite, diplomatic, and Parliamentary method of intimating that we need not worry about being bombed in this island but that it is very necessary for us to consider Imperial defence. Those who understand the methods of higher politics will perceive that our Air Minister has no illusions about another war between civilised nations in Europe but that he is fully alive to the prospects of war in the Pacific and the invasion of civilised Europe by Eastern barbarians.]

Sir Samuel thereafter dealt at considerable length with the progress of the Home Defence Force. He pointed out that of 18 regular squadrons already formed 15 have post-war types of machines.

[It is well to emphasise here the point that none of these machines are of types which can possibly be standardised in readiness for a war within the next two or three years. They must all be regarded as stop-gap designs simply because there is no aeroplane in existence to-day which is fit to be standardised for a war five years hence.]

On the subject of the Auxiliary Air Force and Special Reserve Sir Samuel reiterated statements which he has made at various times of late. The only new points were that he hoped to have two Special Reserve Squadrons instead of the one mentioned in the memorandum issued with the Air Estimates, one of these squadrons to be stationed near Belfast and one near London. [Thus Ulster will have its own private Air Force.]

In reviewing the general scheme for the Home Defence Area Sir Samuel said that we wanted first a solid foundation of the best possible regular units and secondly a national force based upon the great centres of industry and, inspired with the keenness of the Territorial Army. We also wanted a concentration under single command of all air defence units, including fighting and bombing squadrons and anti-aircraft guns, searchlights and observation stations.

It would, he said, take four or five years to complete the first stage of this programme for in time of peace greater expenditure would dislocate the normal life of the country. He hoped by the end of 1926 to have formed half the 52 squadrons which are needed to complete that stage. And he remarked that when it was done we should still be in a position of numerical inferiority as compared with the greatest European air power in a proportion of 1 to 3.

Turning to the Mobile Defence of the Empire Sir Samuel said that if we could put that defence on a more mobile basis we might save large numbers of men and much money. The success of the air command in Iraq had proved this time after time. Further he said that people who know little about air are apt to gauge air strength by the numbers of machines and by the quantities of personnel or materiel. He emphasised the fact that it is quality and not quantity that chiefly matters and he added that so far as the Chief of the Air Staff and the Air Staff are concerned it had always been quality that had been their principal aim. [This is a point which those interested in the Air Force should always emphasise when discussing air affairs.]

Continuing he said that behind the number of machines and their quality there was still the factor of scientific knowledge, discovery, invention and experiment. On this account the research policy of the Air Ministry was of paramount importance. The principle of the work of the scientific people might be described as "safety first." He laid particular stress on the discovery of the reasons for spinning after stalling and methods of preventing a spin following a stall and reducing the stalling speed, and he referred to Sir Arthur Colefax's valuable report on the Croydon accident.

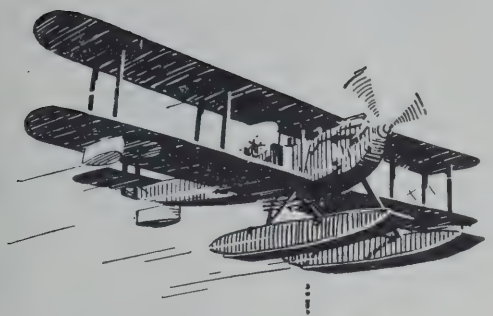
[It is interesting at this point to note how closely the opinions of the Secretary of State for Air coincide with those which have been expressed for the past year or two in The Aeroplane. Regulars reads of this paper may have noticed that steps in development which are advocated herein from time to time habitually become common facts of aeronautical existence some considerable time afterwards.]

On the subject of Civil Aviation and light aeroplane clubs Sir Samuel was encouraging. He said nothing fresh nor had he anything new to say on Civil Aviation or Empire air routes beyond the fact that one of the immediate difficulties of organising an air route to the East was the International situation under which it is impossible to organise a regular air route across Germany. This fact alone he said was responsible for our failure to inaugurate a service to Prague.

As concerns airships, Sir Samuel said they were transforming rather than destroying Lord Thomson's scheme to the extent that they were proceeding with the building of the two airships and were setting up an impartial committee of experts to advise alike the Air Ministry and the company which is building the second ship.

In conclusion Sir Samuel referred to the reconstruction of air war and the bombing of non-military objectives and referred to the very remarkable book recently published by the well-known international lawyer, Mr. J. M. Spaight, and his interesting suggestions for limiting the scope of air war. As an expression of opinion Sir Samuel said that every suggestion for the avoidance of future horrors needs all the thought that we can give it, for unless we can control air warfare it may in the future endanger the whole foundation of civilisation.

[On purely sentimental grounds one agrees with the pious



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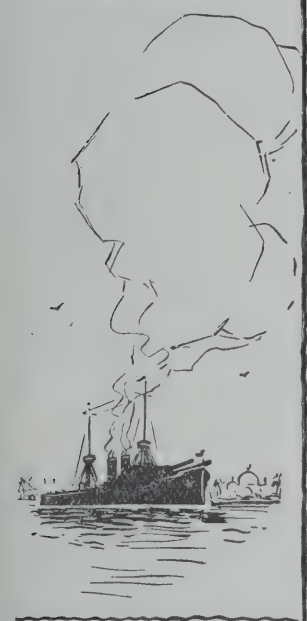
For any climate and any service the 450 h.p. Napier has proved itself the most efficient and reliable aero engine in the world.

Mr. Charles G. Grey writes in the *Aeroplane* of Jan. 28, 1925, as follows:

"EVERYBODY in the East knows what nobody in this country has yet been told, namely that his Majesty's aircraft carrier *Pegasus* has been at Singapore for many months with a number of Napier engined Fairey 111 D float seaplanes on board. During those months the seaplanes have made a complete photographic survey of all the country for miles round Singapore. On the strength of that survey, and the other information gathered by the *Pegasus* as to flying conditions in the Far East, the Air Council will be able to lay proper plans for future air strategy and tactics.

It is satisfactory to know that during the whole of the time no trouble has happened to either the seaplanes or their motors.

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hopes of the Air Minister but writing with an ordinary working knowledge of human nature one states once again one's belief that the cheapest and most humane way of waging war is to abolish all rules which hamper the prosecution of war to its uttermost limit.]

THE DEBATE.

Mr. Philip Snowden opened the Debate. He regretted that the General Election robbed the Labour Party of the only Member who had inside experience of the Air Ministry. He himself would avoid all technical matters. He challenged the statement that every party in the House accepted the basis or the policy on which the expansion of the Air Force was operating. He said that the Air Ministry were not making the same liberal provision for new construction which had been the custom in the past. If it had done so the Estimates would have been bigger by £500,000 He expected a Supplementary Estimate for this purpose during the year.

He understood that the Navy Estimates would show an increase of something like £5,000,000 over last year and that the Army Estimates would also be increased. The former functions of the Navy for the defence of the country had been superseded by the Air Force and he wanted to know how it was that we did not find a corresponding reduction in the expenditure of other branches. Mr. Snowden proceeded to argue that if 26 squadrons cost £21,000,000 an air force of 52 squadrons would cost about £50,000,000.

[Mr. Snowden evidently did not take the trouble to discover how very little the actual squadrons cost compared with what in a factory are called "overhead charges," that is to say fixed expenses for the Air Ministry itself, technical departments, works and buildings and so forth, which do not increase in anything like the ratio of the number of squadrons which they produce.]

Mr. Snowden then embarked on a long argument about the comparative strength of the French Air Force and the English Air Force. [Apparently he still adheres to the fiction that our Air Force has to be gauged in its proportion to that of France. Much time would be saved in the House of Commons if people would leave France out of the question altogether, as we shall never have to fight France, and would regard the question from the point of view of the British Empire, particularly in its relation to the forthcoming war in the Pacific and in Central Europe.]

Lieut.-Colonel Heneage, a new Member who had himself flown to observe artillery fire and had commanded an anti-aircraft battery, suggested in a maiden speech that anti-aircraft gunnery was worth studying. He stated that our anti-aircraft defences [presumably overseas as well as at home] brought down 150 aeroplanes during the last year of the War. He objected to anti-aircraft guns being under the command of an R.A.F. officer for operations.

Captain Wedgwood Benn congratulated the previous speaker and congratulated Sir Samuel Hoare on being back at his old post. He proceeded to advocate further research for the development of Civil Aviation and discoursed at considerable length on air lines. He lamented the number of accidents in the R.A.F., but remarked that it would be a pitiful thing if they were exploited "as a stunt" merely for the purpose of criticising the Air Ministry.

[One commends Capt. Benn heartily for making this point. There are certain papers which on account of the purely personal prejudices of those behind them against the Chief of the Air Staff never lose an opportunity of attacking the Air Ministry and it is quite time that something in the way of pro-Air Ministry propaganda was instituted against them.]

Proceeding, Capt. Benn returned to his old advocacy of a Defence Ministry to control all three Services. He regretted that the Admiralty were paying for the provision of machines for the Fleet Air Arm because as he said the Navy thus had a greater chance of success in "the age-long war which the Admiralty has carried on against the Air Service." Thereafter he proceeded to make a number of quite good points in favour of keeping the personnel of the Fleet Air Arm quite distinct from the Navy. On the subject of disarmament he said that the French menace, which was never a menace but merely a disparity in strength, was disappearing and added that the greatest friend of disarmament in France will be the franc.

Major-General Sir Frederick Sykes criticised the expenditure of money on the Air Force. He wanted to know how it was that the average life of an Air Force machine was only about five per cent. of that reasonably asked for civil aircraft. He said that the additional provision for petrol was not commensurate with the proposed increase in squadrons. Thereafter he proceeded to discourse on airships, imperial aeroplane routes, all-metal aeroplanes, the lack of progress in flying boats, the lack of progress in night flying and fog flying, and various other matters in which readers of this paper are interested.

Mr. Greaves Lord moved that for the encouragement of the development of aviation early notification of accidents should be given to the relatives of persons injured, and that every reasonable step should be taken by investigation and research to prevent or reduce the number of accidents. [One is rather under the impression that these have been among the chief aims and objects of the Air Ministry ever since it came into existence.]

Sir Alfred Butt seconded the amendment and made a reference to parachutes. [He evidently meant well although he showed that his knowledge of aviation was of the most elementary.]

Sir Samuel Hoare intervened at this point to explain that although there had been more accidents in 1924 than in 1923 there had also been an increase in the amount of flying and that the Air Force itself was so much larger that there were more people to be killed. Everything possible was being done to provide "safety first." The question of the control of stalled aeroplanes was being studied and so was the question of slow landing and the question of fire after a crash.

The Secretary of State for Air then made the important announcement that the Air Ministry had decided to adopt a type of free parachute called the Irvine parachute which has been in use for some time in the United States.

[Readers of The Aeroplane will remember that during the War 1914-18 one consistently argued in favour of the use of parachutes by Service pilots. Since then from time to time one has continued to advocate the use of free parachutes as opposed to the static type and in the recent series of articles on one's experiences in America one emphasised particularly the habitual use of free parachutes by the American Army and Navy Air Services. Certain people in the R.A.F. have been steadily trying to secure the use of free parachutes, but, as is usual in everything connected with the Air Ministry progress, have been consistently held up by the obstinacy and foolishness and possibly by the intrigues of the technical experts collected either in the Royal Aircraft Establishment at Farnborough or under its influence.]

Captain Garro-Jones also made a maiden speech and also dug up the disproportionate strength of the French Air Force. He made the rather interesting point that our flying officers think that French Air Service mechanics are more slovenly or careless than ours and that their machines are therefore less efficient. He also resuscitated the old scare of the effect of devastating London with gas or high explosive bombs. Finally he advocated a conference on disarmament. [Captain Garro-Jones does not strike one as being a particularly useful addition to the House of Commons.]

Mr. Thurtle moved to reduce the numbers of the Air Force. [As usual "The voice of the Thurtle was heard in the land" (to crib *The Morning Post's* jest) advocating peace at any price, and it took him nine columns of Hansard to do it.]

Lord Apsley said that the previous speaker's arguments had one advantage, namely, that almost everybody agreed with his sentiments, but personally he thought they were too much in the air. To his own mind the international situation was a parallel to a man who had to carry a gun not because he wanted to use it but because he lived in a lawless country. He said that until law and order had been installed all over the World it would be unsafe for any country not to carry a gun.

Referring to Commercial Aviation he said that it did not offer sufficient temptation to civilians to carry it on and for that very reason we must be glad that we kept up an efficient Military Aviation. He compared the reliability of the motor route between Palestine and Baghdad with the unreliability of the air route. He advocated strongly a further development of our seaplanes for commercial flying [as Member for Southampton he evidently knew what he was talking about] and he pointed out the importance of a seaplane line from Marseilles to Malta and Malta to Egypt. [Altogether it was a very useful speech which might have been longer with advantage.]

Mr. Hudson, another pacifist, supported the ideas of Mr. Thurtle. [His typical pacifist outcry about the wrecking of London by aircraft attack was made funny by a remark of Mr. Hardie that it would not be wrecked if there were steel houses. The speech was full of bombs, poison gas and all the terrible threats of air war which practical experience tells one become in the end far less terrible than hand-to-hand fighting.]

Brigadier-General Warner, late R.F.C., in yet another maiden speech, said that the Secretary of State for Air must have put up a very gallant fight to keep the Estimates down to such a low figure when he was faced by the officers in command of the Air Force.

He said that we must recognise that Great Britain is not to-day protected against aerial assault. He disapproved of the present organisation and instead of two regular squadrons, three reserve squadrons and two auxiliary squadrons would have preferred four regular squadrons and six nuclei flights.

He advised that the Air Ministry should enlarge existing aerodromes rather than buy new ones. In buying new machines the Ministry should buy those suitable not only for training but for flying. They should standardise on one type of machine and work slowly on other types and not hurry to buy a large number.

He did not think that the light aeroplane clubs and training civil aerodromes would meet the expansion of the Reserve. He suggested calling on the Universities and Public Schools for reserve pilots and he hoped to see aviation as much a sport as any other game. Members who had been down any main road near the Universities and had seen undergraduates driving cars and performing on motor bicycles would recognise that they were incurring much greater dangers than they would under proper instruction in flying. He suggested giving a certain number of cadetships at Cranwell to gentlemen from our Dominions Overseas. [Quite a useful constructive speech.]

Mr. Clynes, like his pacifist friends, lamented "the horrifying development of modern methods of war," and the slaughter of women and children. At the same time he expressed his disbelief in disarmament.

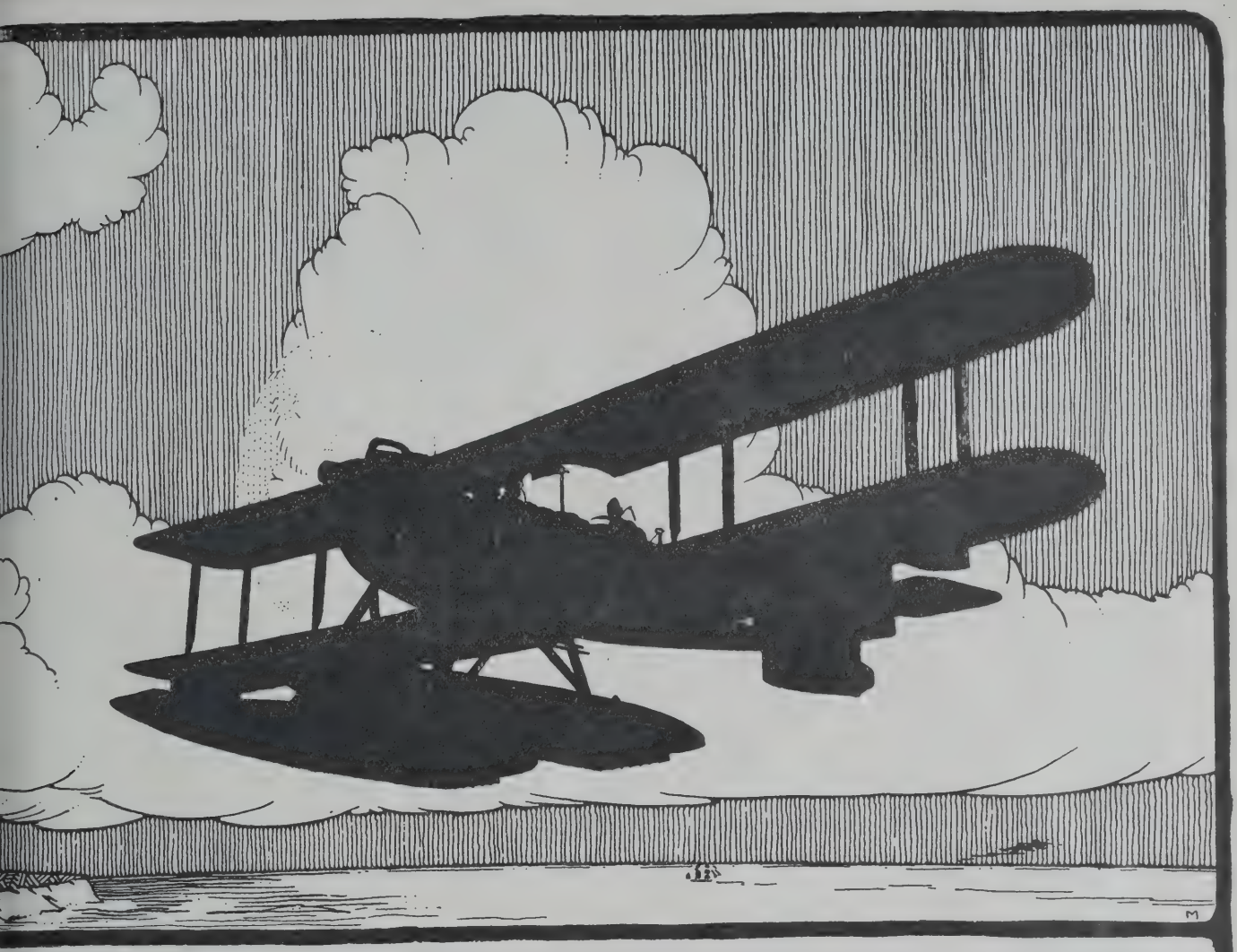
Lieut.-Colonel Sir Joseph Nall said that we were not getting the machines or the flying men in any way comparable to the total numbers which we were asked to vote, or the amount which they were to cost. He quoted some curious [and one would imagine some entirely unreliable] figures showing that at the outbreak of War in 1914, 83 naval officers were available to fly whereas of 84 naval officers at present detailed to aviation only 5 are qualified to fly and the rest are under instruction. [Of course this entirely neglects the whole of the R.A.F. personnel detailed for the Fleet Air Arm.]

He also discovered that only 45 observers of the Air Force and 28 officers of the Royal Artillery are trained for observation duties with the Army. Finally Sir Joseph objected that 247 doctors were needed to look after 2,200 pilots and added that though there are 36,000 men on the strength of the Air Force they were non-effective judged from the bayonet strength point of view.

[One might just as well argue that because there are only 12 gunnery officers in H.M.S. *Resolution* the rest of the officers, 74 in number, and all the crew, are non-effective.]

Lieut.-Commander Kenworthy congratulated Brig.-General Warner on his informative speech. He advocated, as he has done on previous occasions, a Joint General Staff and something in the shape of a Ministry of Defence. He twitted the Air Ministry on publishing advertisements on the back of the Air Estimates.

On the subject of Singapore he wanted to know how much was going to be spent for air defence of the proposed £10,000,000 dock. Also he wanted to know why when so many people could not find houses for their families we were spending £145,000 for barracks "at a holiday resort known as Basra in Iraq" in addition to £191,000 already spent besides £522,000 spent on buildings at Hinaidi.



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He advocated wiping out the whole Air Force on the grounds that there is no half-way house between complete disarmament and having an efficient and sufficient air force to guard the country in time of war.

Mr. Lansbury preached impossible pacifism but rather defeated his own arguments by saying that he was certain that in the days to come "this business of an air force organised by people like the Japanese, by people in China and by the people in India, will pile up a problem for the White Races that they will not be able to face and overcome," because the white population in Europe is a dwindling quantity and that we were teaching the people in Asia who are not a dwindling quantity how to make aeroplanes and poison gases.

[It does not seem to have occurred to Mr. Lansbury that the Japanese and Russians in these days need no teaching in the making of aeroplanes but are quite competent to make their own so that it is necessary for us to make other aeroplanes against them.]

Mr. Saklatvala, the coloured Member of the House, preached pacifism for 6½ columns of Hansard and referred to the Universities and the Public Schools as "these 'nobs' of society," in quite the best Babu style.

Mr. J. H. Thomas supported the Air Estimates and said that Mr. Saklatvala's speech was either spoken in ignorance or was deliberately intended for consumption in other countries and not here, and said that his sentiments did not represent any material force in this country.

Sir Samuel Hoare congratulated Mr. Thomas on having made an impressive speech and said that the Government no less than the Opposition desired to see the abolition of war but they held that partial disarmament would have no such result.

Mr. Morris advocated a conference with other nations with the idea of arranging a limitation of air force.

Mr. Maxton said that his constituents were not going to vote a penny for armaments until the working classes had something worth defending. [Which seems a reasonable argument till one considers that if we had not defended Great Britain in 1914 the British Working Man would now be driven to work by Prussian drill-serjeants instead of being able to draw the dole when he feels tired.]

The Under Secretary of State for Air (Major Sir Philip Sassoon), as he said, taking off in his first flight as a junior Minister, referring to the fatal accident at Croydon on Christmas Eve said that even when the scientific problems are far nearer to solution than they are to-day there would still be the human element to consider. He also referred to the scarcity of accidents among joy-ride firms who last season carried 52,000 persons in 2,400 hours flying without a single injury to a passenger.

[This is a good point and might be used as a very good argument for subsidising joy-ride firms rather than air lines, in that undoubtedly the joy-ride firms do more to popularise aviation than do the air lines.] He also pointed out that the air lines since they had been inaugurated had flown 3,500,000 miles with only 30 accidents.

THE ROYAL AIR FORCE.

The London Gazette.

Feb. 24.

General Duties Branch.—The following Flg. Offs. are granted perm. comns. in the ranks stated (Feb. 25):—E. E. Arnold, D.F.C., O. E. Worsley. Sec. Lt. P. L. Binns, E. Yorks R., is granted a temp. comn. as a Flg. Off., on seconding for four years' duty with the R.A.F. (Jan. 31). The following Plt. Offs. on probation are confirmed in rank:—W. L. McLaren, J. H. Sender, C. W. M. Smith, W. Woollett (Dec. 30, 1924); E. L. Leader (Jan. 5); J. A. Ballantyne, L. S. Birt, P. S. Blockey, W. T. Collins, F. H. Farrow, R. F. Francis, A. E. Haes, W. T. Holmes, C. A. E. S. Kregor, G. D. Middleton, P. H. Nicholls, A. G. Pickering, A. T. S. Studdert, D. M. Tyringham (Jan. 15); A. C. H. Sharp (Jan. 16); C. E. Galpin (Jan. 29).

Sq. Ldr. R. L. G. Marix, D.S.O., is placed on half-pay, Scale A (Feb. 25). The following Flg. Offs. are transferred to the Reserve, Class A:—C. E. J. Arthur (Feb. 24); W. J. McDonough (Feb. 22); G. Thornton-Norris (Feb. 22); C. W. Usher (Feb. 22). Obs. Off. J. F. V. Sugars is placed on the retired list on account of ill-health (Feb. 25); Plt. Off. G. C. I. Strachan is dismissed the Service by sentence of General Court-Martial (Feb. 16); the notification in the *Gazette* of Sept. 16, 1924, concerning Flt. Lt. D. F. Lucking is cancelled.

Stores Branch.—Flg. Off. A. J. Adams is granted a perm. comn. in the rank stated (Feb. 25).

Medical Branch.—G. J. Griffiths is granted a S.S. comn. as a Flg. Off., for three years on the active list, with effect from and with seniority of, Feb. 11.

Chaplains' Bravch.—The Revd. R. M. Bankes-Jones, M.A., is granted a perm. comn. with the relative rank of Sq. Ldr. (Feb. 25).

Reserve of Air Force Officers.—A. H. A. C. Cranmer is granted a comn. in Class BB, General Duties Branch, as a Plt. Off. on probation (Feb. 24). The following Plt. Offs. are promoted to the rank of Flg. Off.:—J. H. C. Harrold (Dec. 10, 1924); G. H. Keat (Dec. 17, 1924); R. R. Rich (Jan. 31); R. K. Harvey (Feb. 10); C. H. L. Needham (Feb. 11); E. F. Smith (Feb. 14); G. C. F. Ely (Feb. 21). The following are confirmed in rank:—Flg. Offs.—E. M. Bates (Feb. 12); H. A. A. Brosse (Feb. 12); A. C. Campbell-Orde, A.F.C. (Feb. 19); C. R. Vaughan (Feb. 12). Plt. Offs.—A. J. C. Overal (Feb. 19); S. G. Shand (Feb. 12).

Flg. Off. W. Ridley is transferred from Class A to Class C (Feb. 24)

Memorandum.—The permission granted to Lt. A. L. Seddon to retain rank is withdrawn on his conviction by the Civil Power (Nov. 17, 1924).

Appointments.

Week ending Mar. 3.

General Duties Branch.—Group Captain C. L. Courtney, C.B.E., D.S.O., to R.A.F. Depot pending disposal on transfer to Home Estab., 4/1.

Squadron Leaders T. H. England, D.S.C., A.F.C., to Aeroplane and Armament Exper. Estab., No. 22 Sqdn., Martlesham Heath, 2/3. R. M. Field, to Air Ministry, 2/3. H. Dawes, M.B.E., to No. 6 Group H.Q., Kenley, 25/2. D. O. Mulholland, A.F.C., to R.A.F. Depot on transfer to Home Estab., 17/1.

Flight Lieutenants D. F. Lucking, to No. 1 F.T.S., Netheravon, 7/2. R. M. Taylor, M.C., to R.A.F. Depot on transfer to Home Estab., 17/1. B. D. S. Tuke, to H.Q., Inland Area, 2/3. D. Craik, D.F.C., to No. 3 Group H.Q., Spittlegate, 2/3.

Flying Officers A. E. Gliddon, to School of T.T. (Men), Manston, 1/3. A. T. K. Shipwright, D.F.C., to No. 2 Sqdn., Manston, 6/3. A. P. C. Hannay, M.C., to School of Army Co-operation (No. 16 Sqdn.), Old Sarum, 8/3. H. J. Storey, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 27/1.

Pilot Officer C. R. Troup, to No. 39 Sqdn., Spittlegate, 15/2.

Medical Branch.—Flight Lieutenants E. N. H. Gray, D.P.H., and J. D. Leahy, M.C., M.B., B.A., to H.Q., Iraq, 1/2. H. B. Troup, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 17/1.

Flying Officers C. J. MacQuillan, M.B., B.A., to R.A.F. Depot, 16/2. L. C. Palmer-Jones, M.B., and T. W. Wilson, to Research Laboratory and M.O.S. of I., Hampstead, on appointment to S.S. comns. for short course, 18/2.

Stores Branch.—Squadron Leader E. W. Havers, to R.A.F. Depot on transfer to Home Estab., 17/1.

A Fatal Accident.

The Air Ministry regret to announce that as a result of an accident at Bircham Newton Aerodrome to an Avro 504K, of No. 99 (Bombing) Squadron, Bircham Newton, on Feb. 27, 1925, Plt. Off. Cecil Stanley Marshall Woode, the pilot of the aircraft, was killed, and No. 253189 AC.1. Ernest Forrester was seriously injured.

Boxing.

R.A.F. v. Cambridge University.—The R.A.F. met Cambridge University at Henlow on Feb. 19, the R.A.F. eventually winning by 19 points against 13 points. Some very good and clever boxing was seen, the Light-weight and Heavy-weight fights being of the highest class.

Feather-weights: Flt. Lt. H. S. Walker (Kenley) beat S. Sam (Sydney Sussex) on points after a very good fight. Flt. Lt. G. V. Howard (Flowerdown) beat S. G. Coulson (Christ's) on points after a very hard fight.

Light-weights: Flg. Off. L. Whitfield (Cranwell) beat E. F. Mitchell (Caius) on points. AC. Woods (Flowerdown) beat C. O. B. Rees (St. John's) on points.

Welter-weights: Flg. Off. O. McGregor (Old Sarum) beat A. T. Blair (St. John's) on points. Flg. Off. Wiltshire (Cranwell) beat D. Broacher (Peterhouse) by a k.o. in the second round.

Middle-weights: G. T. Hardy (Jesus) beat Flg. Off. E. Whinney (Duxford) on points. S. Ranton-Simpson (Magdalen) drew with Plt. Off. C. Evans after a very hard fight.

Light-Heavy-weights: Flg. Off. Scott (Cranwell) beat E. F. Meickle (Pembroke) by a k.o. in the second round. Flg. Off. G. A. Cavis-Brown (Eastchurch) beat A. Harvey-Cooper (Caius), the referee stopping the fight in the second round.

Heavy-weights: L. A. D. Simpson (FitzWilliam House) beat Flg. Off. P. G. Chichester (Manston) on points after a very good, hard-hitting fight.

The Cranwell Magazine.

It is most unlikely that anyone in the R.A.F., or even remotely interested in the R.A.F., will have missed the "Rhymes of the R.A.F." which have appeared from time to time in *Punch*. Three of these poems have been reprinted in the Spring number of the R.A.F. Cadet College Magazine by special permission of the proprietors of *Punch*. The initials at the foot of each poem suggest that the author is an Education Officer at the Boys' Wing, Cranwell. He ought to publish them in a volume for the edification and amusement of future generations of the Service.

Sq. Ldr. Leather, in a letter accompanying a very interesting article on Sport on the Sutlej River, says that it is a great pity that comparatively few R.A.F. Officers seem to be interested in small shoots within the limits of ten days' station leave. Sq. Ldr. Leather's article, when it reaches the R.A.F. in India, will probably produce a nasty rush on the Sutlej River, where the sport is good and the expenses very low.

Sjt.-Major Gorwood has written some hints on Athletic Training which are as valuable as only the experiences of an old hand can be. Other articles are on Rock Climbing, An Orkney Shoot, Salmon Fishing, Archery and Crocodiles. A very good number this.

Anti-Aircraft Units.

The King has approved of the designation of Anti-Aircraft Units of the Territorial Army as follows:—

Royal Artillery.—55th Anti-Aircraft Brigade, Royal Artillery—163rd (Kent) Anti-Aircraft Battery, Royal Artillery.

Royal Engineers.—26th (London) Anti-Aircraft Battalion, Royal Engineers (London Electrical Engineers); 301st, 302nd and 303rd (London) Anti-Aircraft Searchlight Companies (London Electrical Engineers).

27th (London) Anti-Aircraft Battalion, Royal Engineers (London Electrical Engineers)—304th, 305th and 306th (London) Anti-Aircraft Searchlight Companies (London Electrical Engineers).

Independent Companies.—307th (Tyne) Anti-Aircraft Searchlight Company, Royal Engineers (Tyne Electrical Engineers).

Essex Group, Anti-Aircraft Searchlight Companies, Royal Engineers—309th, 310th, 311th and 312th (Essex) Anti-Aircraft Searchlight Companies, R.E.

Kent and Middlesex Group, Anti-Aircraft Searchlight Companies, Royal Engineers—313th and 314th (Kent), and 317th (Middlesex) Anti-Aircraft Searchlight Company, R.E.

Surrey Group, Anti-Aircraft Searchlight Companies, Royal Engineers—315th, 316th and 318th (Surrey) Anti-Aircraft Searchlight Companies, R.E.

ROLLS-ROYCE
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Some extracts concerning the recent flight of 8,500 *miles round Australia from "The Aeroplane" of May 22nd, 1924, entitled*

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THE ROYAL AIR FORCE *V.* THE ROYAL NAVY.



Left, a Navy player persuaded to part with the ball. Right, a line out.

This match was played at Twickenham on Feb. 25 and resulted in a win for the R.A.F. by a penalty goal to nothing.

The Rugby Union's sacred turf at Twickenham was partly submerged before the game began and in the first ten minutes of play it was churned into a miniature of no-man's land. With acute recollections of a certain Ireland and Navy wing three-quarter's activities in the same theatre of war about ten days before one had offered up the prayer "let there be mud," and it was so. The R.A.F. can always be depended upon in a forward game and on this occasion they certainly had a day out.

One begs to differ from the *Morning Post* and other newspaper correspondents who stated that the Navy had the better of the scrimmages. There is no doubt that in sacrificing their first line for an extra three-quarter they gave away an extra bit of push with the result that Sq. Ldr. Russell got the ball again and again instead of Lt.-Cdr. Kershaw.

The Navy got away first but punting ahead were pulled up by A. C. Casey, the R.A.F. full-back who fielded the ball cleanly and found touch with a good left-foot kick. Scrums were the next movement but the Air Force superior shoving and heeling was lost by picking out. A free kick to the Navy in front of the goal posts missed narrowly. This apparently shook the Air Force, who regained a lot of ground with a forward rush in which Flt. Lt. "Tubby" Turner showed that in three Iraq date-seasons he has lost neither girth nor guts. (Surely "heart" is less indelicate.—ED.)

By this time it was difficult to recognise individual players and the sides could only be distinguished by the different shades of mud. (The R.A.F. play in light-blue jerseys this year.) Lt.-Cdr. Kershaw then got the ball and started a brilliant Fleet manœuvre which sent Lt. Stephenson up the right wing at a dangerous speed. He was brought down by Cpl. Wale, who found touch with a tremendous kick, amid gasps of relief from the horror-stricken supporters of the Air Force.

One of the most remarkable things about this very remarkable game was the way in which the three-quarters on both sides handled a very heavy and greasy ball in a quagmire. They kept well together and gave their passes short and low. When this became dangerous the Air Force altered their tactics and the centres kicked into touch leaving the wings to deal with their opponents. The tackling of the R.A.F. backs was magnificent. One has a delightful mental snapshot of six feet of battle-cruiser aground—tackled *Lowe*.

The Navy fought their way back into the Air Force twenty-five and the situation was only saved by Casey touching down. AC. Casey (Henlow) played a great game, he is very sure with his hands, is level-headed, and can kick with either foot. He has the makings of a first-class full-back when his tackling becomes more certain. Cpl. Wale's kick which scored the penalty goal was from about 40 yards out and wide to the left, a magnificent effort.

The second half was very much like the first, except that the R.A.F. spent more time in the enemy's territory. The game became mainly a forward one and was a prolonged battle between the two packs, neither of which showed any signs of feeling the speed of the game or the heaviness of the going. Once the ball went out to the three-quarters who got the ball out to Wale with some nimble handling. Wale got well away but was smothered just on the line and went over the line without it. His opponent, Lt. Stephenson, however, did a double somersault into the rows of sunk seats.

The Air Force recovered from this and in a mix-up on the the opposite side, Sq. Ldr. Russell entirely surrounded by Navy forwards kicked the ball straight into the air with a twist on it which brought it into touch with about 10 yards gained. It was a great battle of scrum halves both at the base of the scrum and in defence.

The R.A.F. skipper is perhaps a trifle slower in getting away than the Navy skipper, but he is certainly more deadly in defence. He was always there and on one occasion at least during the game turned up near the Air Force goal line, dropping apparently from the sky to defeat the Navy's evil intentions.

The last ten minutes of the game consisted of forward rushes by both sides, the Air Force particularly showing fine form in the loose. A desperate rally by the Navy was foiled by an equally desperate Air Force defence and the game ended in a fierce battle of thirty mud-caked members of His Majesty's Forces almost unable to distinguish friend from foe.—C. M. Mc. A.

The teams :—

Royal Navy.—Pay.-Lt. E. S. Satterthwaite, back; Lt. H. W. V. Stephenson, Lt. H. C. Cumberbatch, Sub-Lt. R. W. Armytage, and Sub.-Lt. W. H. Wood, three-quarter backs; Lt.-Cmdr. C. A. Kershaw (captain), and Sub-Lt. T. S. Lee, half-backs; R.-P.-O. W. G. E. Luddington, Lt. G. C. F. Branson, Lt. J. W. Forrest, Lt. W. G. Agnew, Lt. A. A. Havers, Sub-Lt. G. W. Yale, Sub-Lt. C. M. Morrell, and Lt. P. B. R. W. Williams-Powlett, forwards.

Royal Air Force.—AC. W. Casey (Henlow), back; Cpl. J. M. Wale (Flowerdown), Plt. Off. J. Marcy (Andover), Flt. Lt. C. N. Lowe (Kenley), and Flt. Lt. O. C. Bryson (Cranwell), three-quarter backs; Sq. Ldr. J. C. Russell (Upavon) (captain), and Flg. Off. P. J. Chambers (Manston), half-backs; Flt. Lt. J. S. Chick (Farnborough), Flt. Lt. E. T. Turner (Uxbridge), Flg. Off. F. W. Sinclair (Henlow), Flg. Off. T. Rose (Duxford), Plt. Off. F. V. Beamish (Old Sarum), Plt. Off. G. R. Beamish (Spittlegate), Flg. Off. C. D. Adams (Netheravon), and Cpl. W. Johnson (Ruislip), forwards.

IMPRESSIONS FROM THE MATCH.

One of the first orders given at the creation was "Let the waters under the heaven be gathered together into one place." Somewhat similar instructions appear to have been issued for the match between the R.A.F. and the Navy (or the Fishermen as they are now called by the R.A.F. at some stations). As the Navy team marched onto the ground the R.A.F. band played "A Life on the Ocean Wave"—appropriately. It is of course notorious that Fishermen cannot swim and, as they were unable to persuade their battle-cruisers and other similar runabouts to accompany them to Twickenham, probably because mud is so much thicker than water, at the end of the game they were found drowned by three points.

It was a great game and the result was in doubt right until the end. One sympathised with Sq. Ldr. Medhurst, who played touch-judge for the Air Force, on having only two arms to wave. How much happier he would have been had he been born an octopus! One felt that had the game gone on much longer, nothing could have prevented Sq. Ldr. Medhurst from throwing away his flag, taking off his coat and joining in the game.

One of the great features of the game was the great effort on the part of the fifteen Fishers to catch the Wale. They just succeeded within a foot or so of the line, otherwise there would have been a try for the R.A.F.

Lt.-Cmdr. Kershaw's shorts always cause much admiration. They obviously have some plus-fours somewhere in their pedigree and one wondered whether or not they were the inspiration for some of the *Daily Mirror's* fashions for sports girls.

This match is really as good as the Pageant for seeing everyone one knows. In spite of the weather everyone (that is to say, all the R.A.F. personnel) came away with a thoroughly satisfactory feeling and one heard the expression "Thank God we beat the Fishers, anyway!"—G. D.

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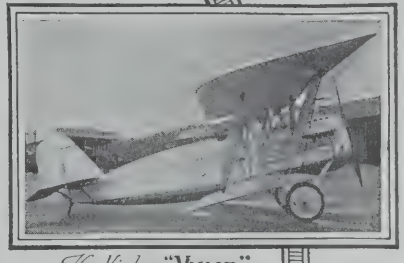


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THE DE HAVILLAND MOTH (A PRACTICAL LIGHT AEROPLANE).

The D.H.60, otherwise known as the de Havilland Moth, was exhibited to the Press on Monday, Mar. 2, at Stag Lane Aerodrome—where, despite extremely bad aerodrome conditions, Mr. Broad took a number of distinctly heavy passengers into the air with extreme ease. The Moth has been described as a light aeroplane, and in fact it is light, but it is scarcely of the type which has hitherto been meant by that term, and its performance, with full load, puts it on a level with much heavier and more powerful types.

It is perhaps fair to say that Capt. de Havilland had in mind the desirability of at once producing a machine which will do now what those who believe in the light aeroplane hope the latter will be able to do in time. In this he appears to have succeeded admirably.

The Moth is a perfectly normal biplane—at a distance and in side view it might easily be taken for a D.H.9 much further away. The fuselage is of the standard D.H. three-ply covered type, with a domed top, carrying pilot and passenger in tandem—one below the centre section and one behind the wings. Both seats have controls, those of the front seat being removable, and a speaking tube is fitted so that the occupants may converse easily—particularly when the machine is being used for instructional work.

The engine, which is the 60 h.p. A.D.C. Cirrus described in the last issue, is supported directly by the top rails of the fuselage, and is isolated from the cockpits by an inclined fireproof bulkhead.

The wings are of equal span and chord, slightly staggered, and have a uniform dihedral. The centre section, which contains the fuel tank, is supported, as to its front spar, by a pair of inverted Vees of oval-section steel tube, which renders cross-bracing unnecessary in the side panels, and allows free entrance to the front cockpit. The wings fold about hinges at the inner ends of the front spars. The rear spar of the bottom wing is dropped below the fuselage so that when folded the trailing edge passes under the body, and the machine has then a maximum width of 9 ft. 8 in. There is one pair of spruce interplane struts per side and streamline wire cross and incidence bracing is used.

The undercarriage is precisely similar to that which has been used on the majority of recent D.H. machines. An axle is carried by a pair of hinged struts raking backwards from below the engine compartment and is supported by a nearly vertical telescopic member in which rubber in compression serves as a shock-absorber.

The controls are of the usual stick type, and when the front stick is removed, a hinged aluminium trapdoor covers the socket and all moving parts so that a careless passenger cannot jam the gear with his feet. Adjustable pedals are fitted to the rudder bars, and there is enough leg room in both cockpits to give plenty of space for the largest passengers. The domed top of the fuselage comes well up over the shoulders, and with the aid of an adjustable windscreen, the occupants are unusually well screened from draughts.



Two views of the Moth in the air.

The engine—which runs extremely smoothly—is fitted with a long exhaust pipe, and it is so silent that it is quite possible for the two occupants to communicate without the aid of the speaking tube.

No accurate performance tests have yet been made on this machine, but the tests so far made—with an airscrew which does not permit the engine to develop its full power—indicate that the machine has a better performance than is indicated in the specification.

The Moth, even in the present waterlogged state of the aerodrome, takes off quickly, and climbs really fast. She obviously handles extremely easily, performs all the usual stunts (in the hands of Mr. Broad) in an exemplary manner, and lands very slowly. She is undoubtedly a thoroughly practical training machine and should certainly meet the needs of the Light Aeroplane Clubs, and that of the private owner.



OLD FORD AND NEW.—The Moth folded for transport.

"MOTH"

TWO SEATER LIGHT AEROPLANE

60 H.P. "CIRRUS" ENGINE.



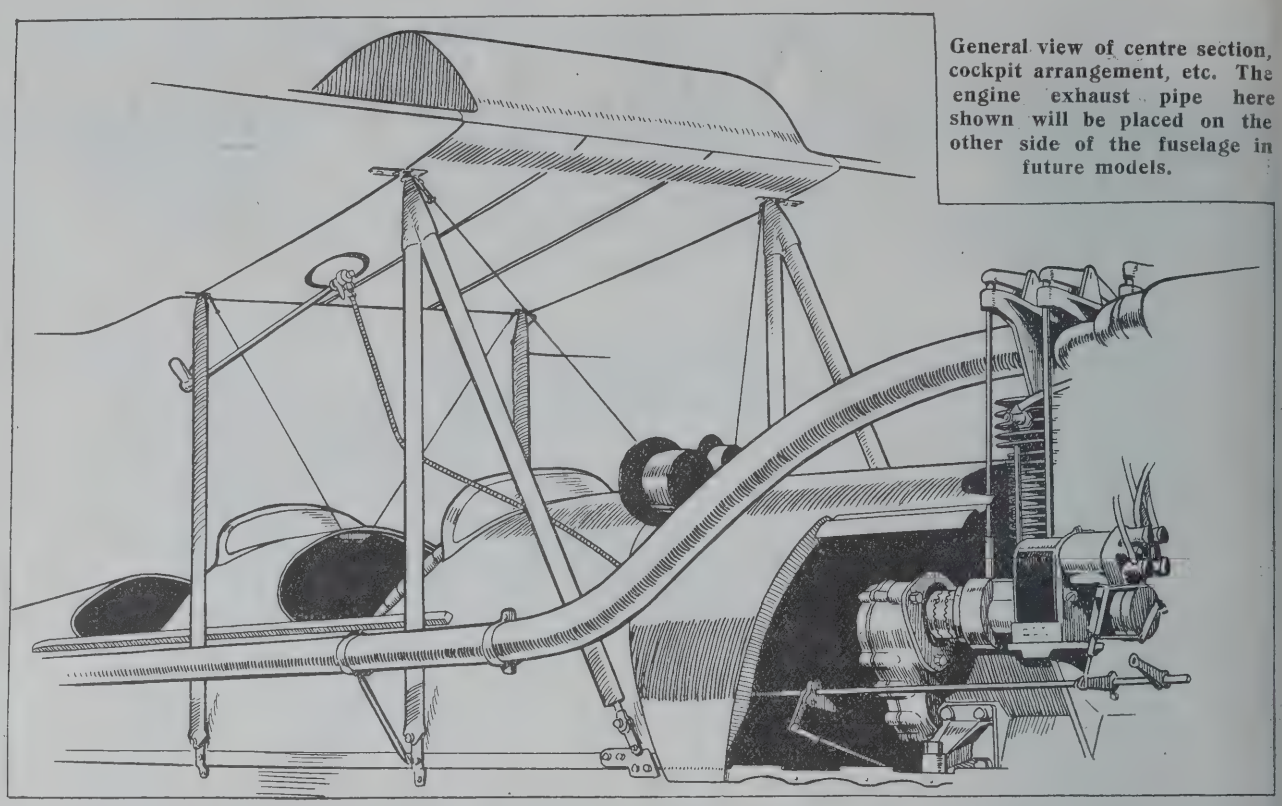


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General view of centre section, cockpit arrangement, etc. The engine exhaust pipe here shown will be placed on the other side of the fuselage in future models.

Fairey Seaplanes for the Dutch Naval Air Service.

In answer to a question recently raised in the Dutch Chamber regarding the placing of an order for four seaplanes for the Dutch Naval Air Service with the Fairey Works, the Minister, Westerveld, stated that the Dutch Navy recently required seaplanes for carrying on board cruisers of the *Java* type. The N.V. Nederlandsche Vliegtuigenfabriek (Fokker) and the N.V. Nationale Vliegtuig-Industrie (Koolhoven) both submitted designs, and the Fokker designs were chosen. Though the requirements were very severe they were accepted by the Fokker firm. During the tests, however, it became clear that the firm could not meet all the requirements. The tests took up a great deal of time and were finally abandoned. There was no question of any fault either on the part of the aircraft firm or of the Naval authorities.

When it was recognised that this type seaplane did not come up to requirements, tests were carried out of a Fokker aircraft converted into a float seaplane. This type aircraft and engine also proved below standard.

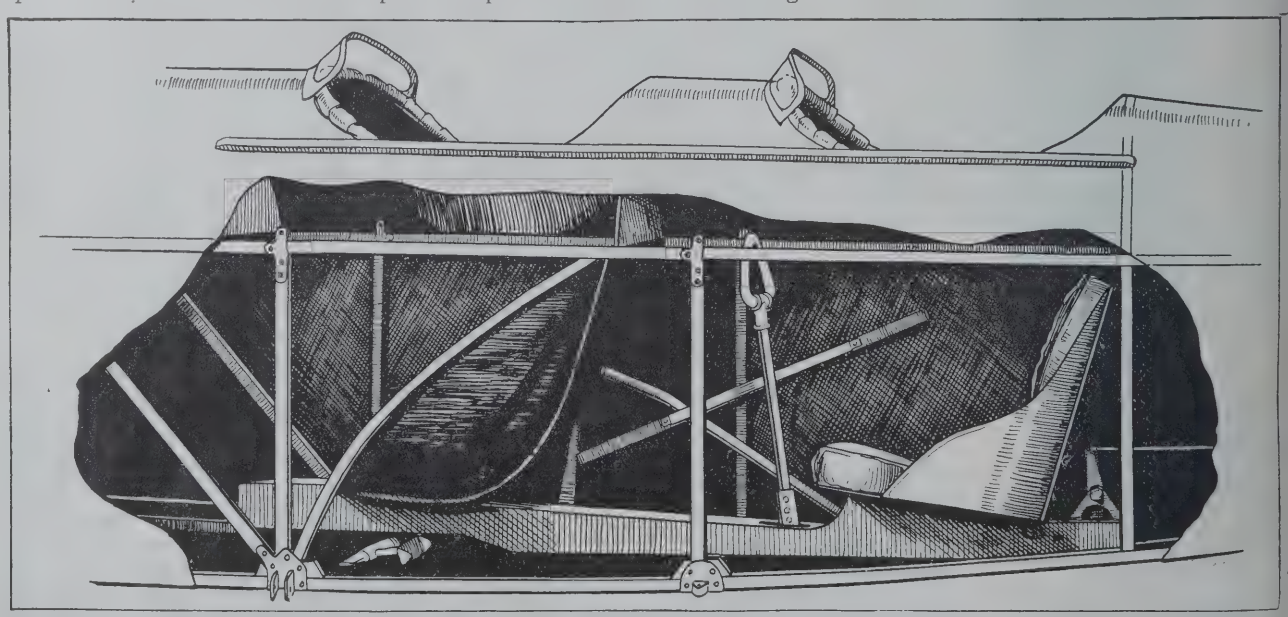
In view of the progress made in the construction of the cruiser *Java*, it was decided that an existing and suitable seaplane must be ordered. The seaplane adopted was the standard type III D. Fairey seaplane. As these aircraft could be delivered in time, the order was placed in December, 1924.

Keeping It in the Family.

It has come to one's notice that one N. Scott, late motor-driver, R.N.A.S. (Yarmouth Air Station) after a considerable period of unemployment through no fault of his own and with no prospect of an opening in the motor trade has been given the opportunity of setting up a business in dealing with left-off suits, etc.

He will pay full market prices for any lounge, dress, dinner or sports suits that have been placed on the retired list, also any overcoats, or old uniforms, etc., but for the first consignment asks for a few weeks' credit until he can get on his feet. Practically everyone must have at least one old suit or a misfit that is merely taking up valuable space. It is hoped that everyone who reads this notice will overhaul their kit, and send anything that they don't want to N. Scott, 76, Tachbrook Street, Westminster, S.W.1.

By so doing they will be sure of receiving full market value for the goods, and at the same time they will be assisting one who is making a determined effort to earn an honest living.



View of the cockpits with the side of body cut away. Despite the small section of the fuselage all controls are arranged to encroach as little as possible on the available space and consequently there is ample room for most large persons in either cockpit.

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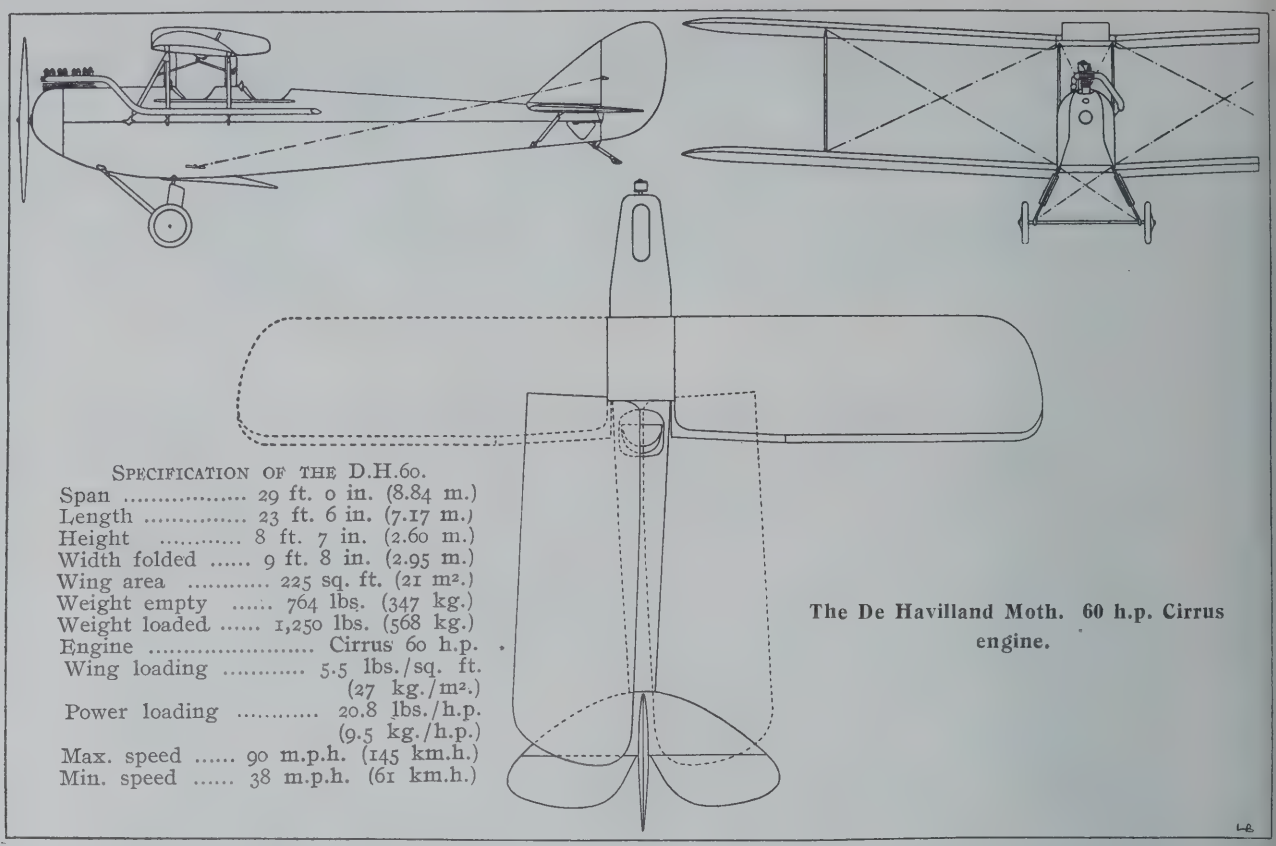
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Specification of the D.H.60.

Span	29 ft. 0 in. (8.84 m.)
Length	23 ft. 6 in. (7.17 m.)
Height	8 ft. 7 in. (2.60 m.)
Width folded	9 ft. 8 in. (2.95 m.)
Wing area	225 sq. ft. (21 m².)
Weight empty	764 lbs. (347 kg.)
Weight loaded	1,250 lbs. (568 kg.)
Engine	Cirrus 60 h.p.
Wing loading	5.5 lbs./sq. ft. (27 kg./m².)
Power loading	20.8 lbs./h.p. (9.5 kg./h.p.)
Max. speed	90 m.p.h. (145 km.h.)
Min. speed	38 m.p.h. (61 km.h.)

The De Havilland Moth. 60 h.p. Cirrus engine.

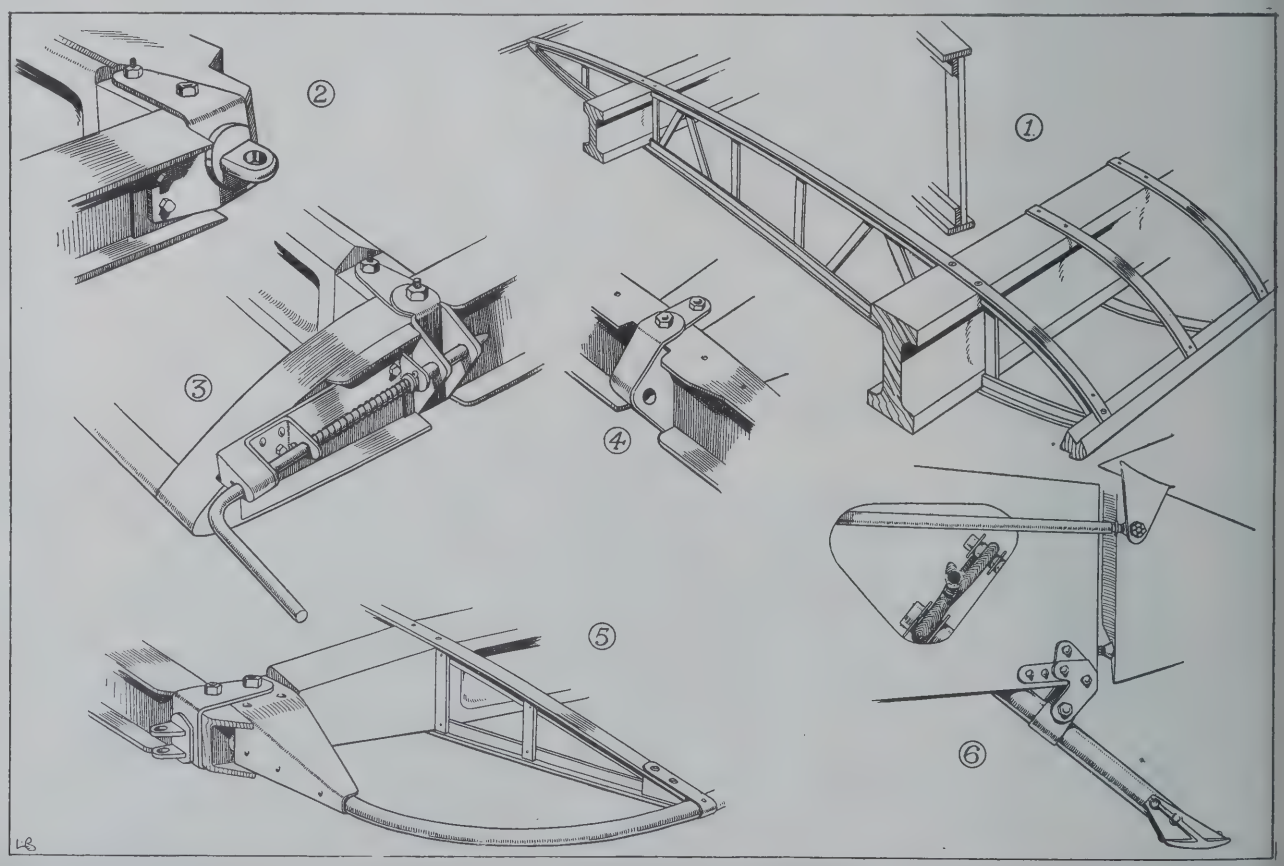
The Royal Aeronautical Society.

Lecture :—On Thursday next (Mar. 5), Lieut.-Colonel C. B. Heald, C.B.E., will lecture to the Members of the Royal Aeronautical Society at 5.30 p.m., on "Some Medical Aspects of Air Transport," in the Library, at 7, Albemarle Street, W.1.

Silver Medal :—The silver medal for the best paper published in the Journal during the year 1924 has been awarded to the paper entitled "Sound Reception," by Major W. S. Tucker, D.Sc., which appeared in the issue for August, last year.

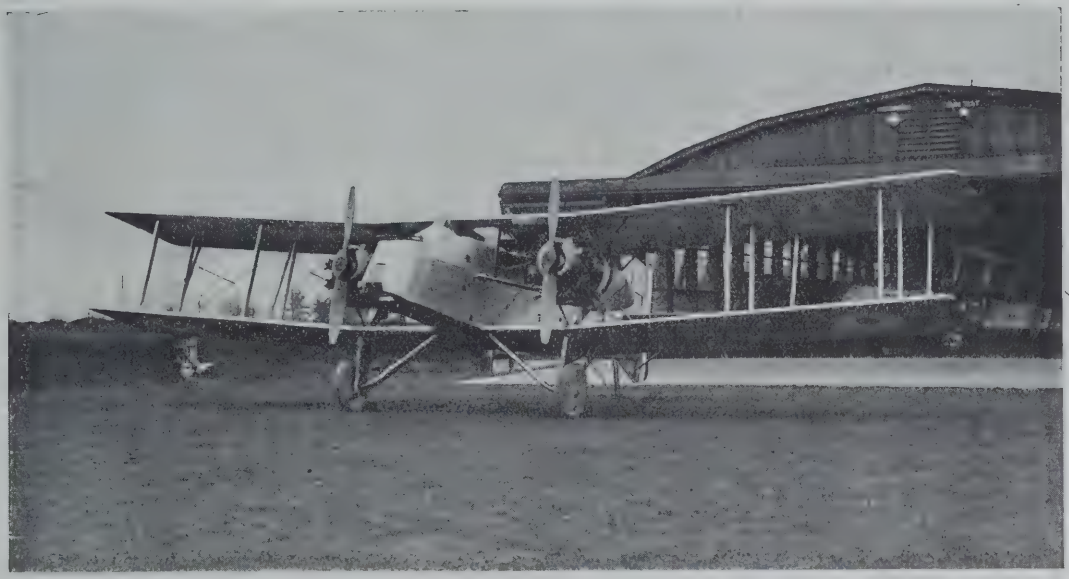
The Institute of Aeronautical Engineers.

The lecture by M. E. Dewoitine on The Advantages of Metal Construction, originally announced for Mar. 6, has been postponed to suit the convenience of the author to a date in May, which will be announced later.



STRUCTURAL DETAILS OF THE D.H.60.—(1) Wing spar and rib construction. (2) Hinge fitting on rear spar of top centre section. (3) Locking pin on centre section for front spar joint. (4) Top front spar fitting to take locking pin (3). (5) Bottom rear spar hinge. (6) Tail skid.

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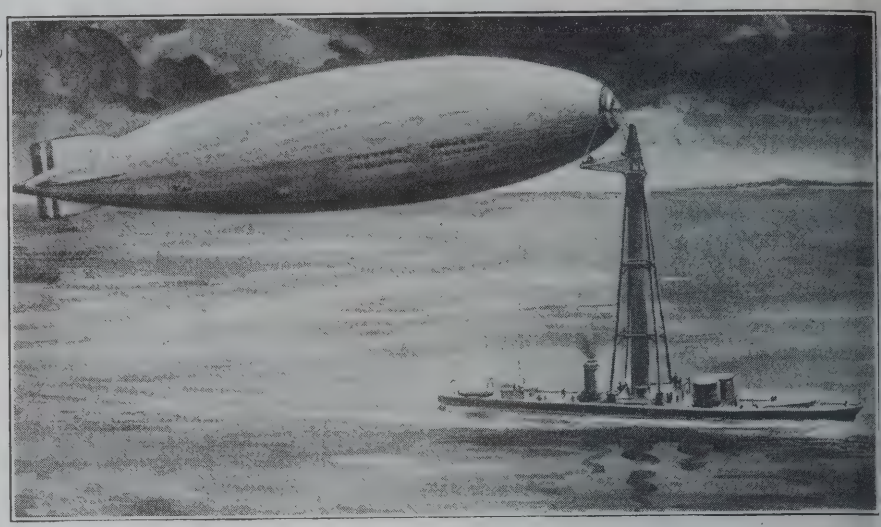
LONDON OFFICE 135-137 QUEEN VICTORIA ST. E.C.
Telegrams Boutique Cent London Telephone 4642 Cent

Contractors to the Air Ministry, etc.

The Airship Guarantee Co.'s Proposed Airship.

As all readers of the Daily Press are by now aware, the Aircraft Guarantee Co., with which Commander Burney's name is so largely associated, propose to introduce into the new 5,000,000 cubic foot airship which they are to build under contract with the Air Ministry, a number of changes in general arrangement from those which have been usual in previous rigid airships.

The most important of these is the suppression of any external control and passenger cars and the arrangement of the control position in the nose of the hull and of the passenger accommodation inside the envelope. The engine cars will remain in positions outside the hull as in earlier ships. The obvious advantages to be gained are a distinct decrease in the resistance of the ship. It is claimed that the effect in the case of the ship now in hand will be an increase of some 10 m.p.h. (70 m.p.h. to 80 m.p.h.) with the same power, or a 50 per cent. increase in radius of action at the same speed.



A sketch of the proposed new airship attached to a floating mooring mast.
(Copyright, Airship Guarantee Co

The placing of the control position in the nose of the hull renders the use of the present type of single mooring attachment impossible, and therefore a new form of two-point mooring gear, by which the ship is attached to two projecting arms carried on a rotating platform on the mooring mast is to be used. It is claimed that this form of mooring gear has distinct practical advantages over the original system, and that in particular it facilitates mooring to a floating base—although it is not quite clear how.

From the illustration of the proposed ship it appears that the accommodation for passengers and crew is to be arranged well up the sides of the hull, not in the keel, as might have been expected. This would seem to involve unnecessary difficulty in the way of providing access from one part of the living quarters to another unless a good deal of gas-bag capacity is to be sacrificed, and also to make it rather more difficult to ensure that the quarters shall be kept free of gas—which is a somewhat important matter.

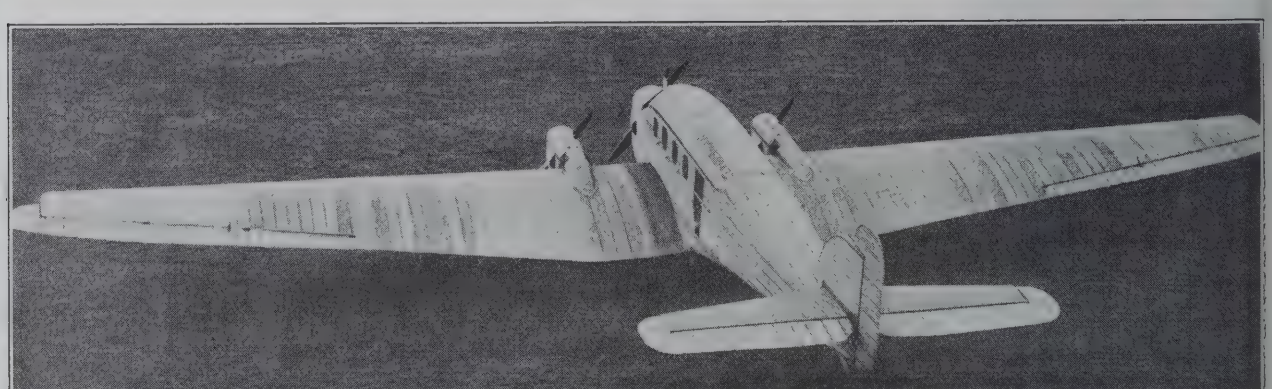
The reduction of resistance has such a large effect on the practical utility of the airship that there can be no doubt that this attempt to produce a streamlined airship is a move in the right direction and the Airship Guarantee Co. are to be congratulated upon having decided to face the by no means negligible practical difficulties which are undoubtedly to be encountered.

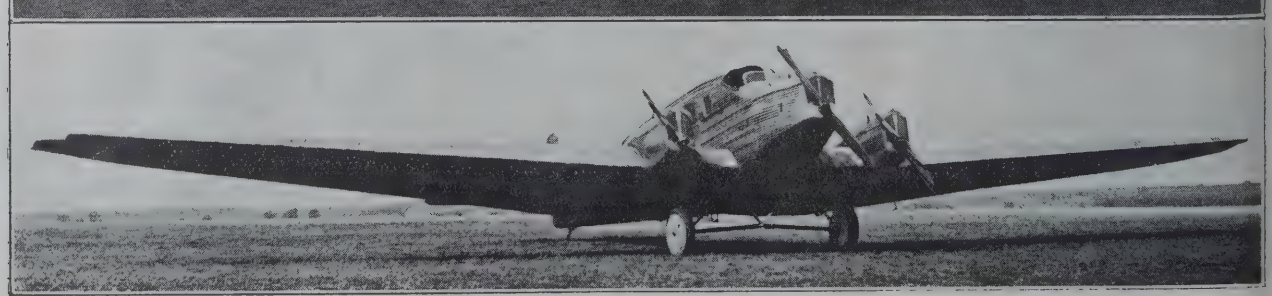
A Three-Engined Junkers.

The three photographs here reproduced show the Junkers G.23 which is now being built in Russia, Sweden, and Germany. The machine is designed to carry 12 to 14 passengers and two pilots, and can be fitted with a variety of engines developing from 420 to 720 h.p. Apparently in the machine illustrated the central engine is of greater power than the two wing engines.

The machine can also be made as a twin-float seaplane, when it is known as the F.13. The only measurement at present available is that the span is 28 m. (92 ft.).

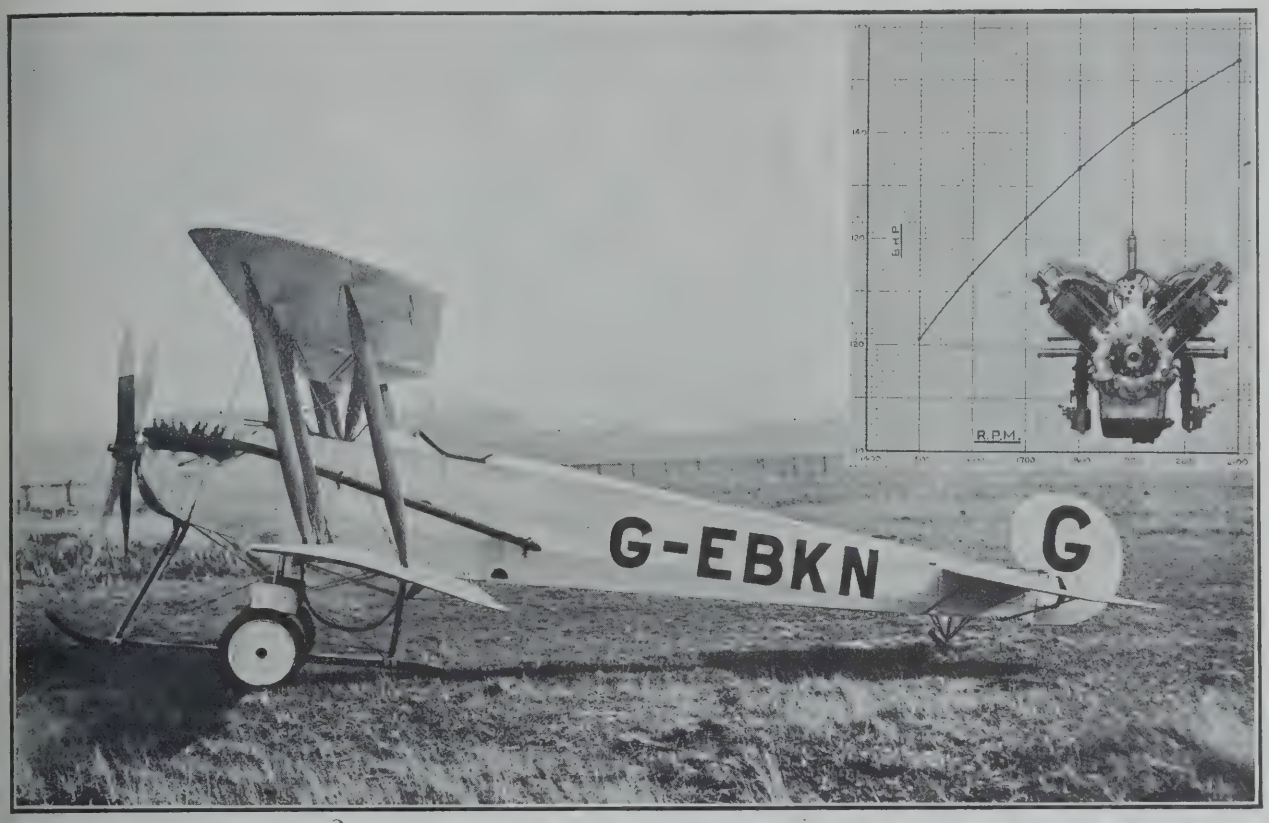






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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 8; Wednesday, 11; Thursday, 13; Friday, 9; Saturday, 13; Sunday, 8.

IMPERIAL AIRWAYS, LTD.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 52, passengers 90, freight 6 tons.

AIR UNION:

Paris—London: Machines 15, passengers 33, freight 6 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 7, passengers 11.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 52, carrying 90 passengers. Foreign machines: 22, carrying 44 passengers.

Comparative Figures:

For week ending Mar. 1:

Machines, 74; Passengers, 134; Crews, 89; Total personnel, 223.

Corresponding week, 1924:

Machines, 46; Passengers, 38; Crews, 72; Total personnel, 110.

Corresponding week, 1923:

Machines, 53; Passengers, 164; Crews, 102; Total personnel, 266.

Corresponding week, 1922:

Machines, 45; Passengers, 81; Crews, 74; Total personnel, 155.

Corresponding week, 1921:

Machines, 30; Passengers, 32; Crews, 38; Total personnel, 70.

Croydon Notes.

There are two stories from Croydon which tend to bring back some of those joys of the old days which have been too long absent.

The first story concerns the changing of an engine of a W.8b. This engine was not giving its full-power revolutions, and so, in accord with the "safety first" policy of the Management it was taken out and another one was installed. This also was found on test to be down in revs. and the story goes that owing to some error on the part of an underling another engine which had been taken out of an aeroplane for overhaul had been installed instead of that which had been tuned up for the machine.

A personage unconnected with Imperial Airways, Ltd., and therefore perhaps somewhat catty and biassed remarked that it was very lucky that they did not fit a rotary engine as it "would have looked so odd." Other people are suggesting that each engine should in future be painted a different colour so as to render them more easily distinguishable.

The second story has to do with the "rescue" of some shipwrecked mariners by Mr. F. L. Barnard. Mr. Barnard left Croydon on Wednesday on the good ship G-EBBY, with one passenger, goods and mail. When passing over Gris Nez he sighted what he thought was a ship in distress. He at once sent out a call for help on behalf of the ship and in the evening papers there were thrilling accounts of how as the result heroic rescues were made.

Subsequently the wreck was discovered to be the hulk of a Roumanian ship which had gone ashore in the gale early in the New Year. Mr. Barnard has had his leg pulled severely over the affair. But one is inclined to think that he made an error on the right side. He did better to find a mare's nest than to omit to help a ship which might easily have been in distress.

One had an opportunity last week of inspecting the new Fokker F.VII at close quarters and certainly it is a very fine machine indeed. The cabin is pleasing to all the five senses. The decorations have been done by a well-known firm of Dutch furnishers and everything is made washable, which is very important owing to the effect of the movement of a machine in the air on the interior of the human anatomy. The cabin is very much wider than a W.8b or a D.H.34 and there is plenty of room for a bulky passenger to walk up the aisle. And the bulky passenger is in mass production in Holland.

There is however one very serious defect in the machine and that is its lack of speed, its top speed being only 80 m.p.hr. This could easily be remedied by the addition of another hundred horse power or so. It seems a pity to spoil the ship for a ha'porth of tar as we say in England.

One trip that the machine made last week was from Rotterdam to London and it took five hours all but eight minutes for the journey. It is true that there was a strong head wind but there should be some reserve power for such occasions. Three other similar machines are being built for the London service.

Croydon on a Sunday is now but a shadow of its former self. In spite of nice mild weather and plenty of arrivals and departures there were only a couple of dozen people in the pig-pen. Three years ago there would under similar conditions have been several hundreds. It seems that Imperial Airways Ltd. might well turn their attention to providing some sort of a show for people to see as it is only by practical propaganda that the public interest will be aroused.

The advertisements of Imperial Airways Ltd. have been causing considerable amusement lately. What promised to be an interesting series of famous people who travel by air was started by a large photograph of Miss Gladys Cooper. Apart from the fact that many people mistook this for an advertisement for someone's pearls or dentifrice, as no additions have been made to the series it is thought that Miss Cooper must be the only famous person who travels by air.

Still the world goes on just the same.—G. D.

The Cape Town-Durban Air Mail Service.

On Mar. 2 the Cape Town-Durban Air-Mail service was inaugurated, when two D.H.9s (Siddeley Puma engines) left Cape Town with mail bags oft the Union Castle liner *Windsor Castle*, for Durban.

The mail, consisting of 35 bags weighing 456½ lbs., arrived at Durban 2 hrs. 40 mins. ahead of schedule, after a 12-minute stop at Oudtshoorn, and 5-minute stops at Port Elizabeth and East London.

America Buys It.

According to the daily press Mr. Grindell Matthews has sold his so-called "death-ray" to America. One can congratulate Mr. Matthews on the deal but certainly one cannot congratulate America on having bought it (in both senses of the word).

It will be remembered that much amusement was caused in this country about a year ago by the "grindelling" of Mr. Matthews and his ray until finally it was proved to be neither of recent discovery nor of any practical value.

So far as one can remember Mr. Matthews at the time stated that the French had bought his inventions. One wonders who will be the next purchasers.—G. D.

Paris-Brussels by Light Aeroplane.

On Feb. 17, M. Simonet, the well-known Belgian pilot, flew from Paris to Brussels, on the Pander light aeroplane (25 h.p. Anzani engine), in 2 hours 45 minutes.

He left Le Bourget at 14.40 hours and landed at Evère, Brussels, at 17.25 hours, having covered the distance of 175 miles at an average speed of over 62 m.p.h.

Brussels-Belgian Congo.

Lieuts. Thieffry, MM. Roger and de Bruycker, who are attempting to fly from Brussels to Kinshasa, in the Belgian Congo, on a Handley Page W.8F. (one Rolls-Royce Eagle and two Siddeley Puma engines), arrived at Niamey on Feb. 25.

A Desert Adventure.

Capts. Lemaitre and Arrachard, who recently attempted to fly from Paris to Dakar non-stop on a Bréguet XIX (480 h.p. Renault engine), and later flew from Dakar to Timbuctoo were reported missing after having left Timbuctoo on Feb. 20 on their return to Dakar.

On Feb. 26 they arrived at El Goleah and reported that they had lost their way and on running out of petrol had landed at Ain Mezzer on Feb. 20. In order to get from Ain Mezzer to El Goleah they must have travelled either on foot or by camel.

An official statement says that the two officers are well and that the machine is undamaged.

The Cambridge University Aeronautical Society.

The Cambridge University Aeronautical Society has had a singularly interesting series of meetings during the present term. Prof. Melville Jones began the campaign by discussing cloud flying, and was followed by Professor Bairstow, who discussed the Prandtl theory and its limitations before an audience of 70. One doubts if the audience would have been as large as this at the R.Ae.S.

Wing Cdr. Douglas gave a most interesting lecture on Air Fighting, and Mr. Farren, on the processes of Aeronautical Design, gave a very able exposition of his subject.

A series of 200 lantern slides of aerial photographs—taken by Aero-Films, Ltd., and shown by Mr. Wills—were warmly appreciated, but Cambridge is evidently seriously-minded, for this drew a smaller audience than did Prof. Bairstow.

The last lecture to date was one by Mr. H. R. Ricardo, who, in a little over an hour, covered the design of high-speed engines in a comprehensive manner, and then for another hour found ready answers to a series of questions of all sorts emanating not only from the Aeronautical Society, but also from members of the University engineering department.

Over 200 members recently paid a visit to Cardington to see R.33. They were splendidly looked after by the staff of that establishment and were greatly interested in what they saw.

The Royal Air Force Club.

The Annual General Meeting of the Royal Air Force Club will take place at 5.30 p.m., on Wednesday, Mar. 11, 1925.

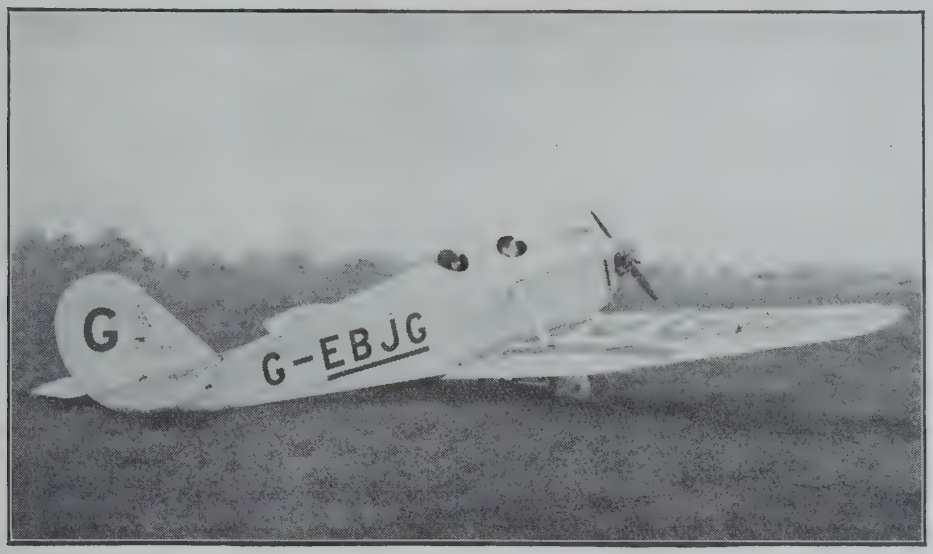
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Homeward Bound.

Sir Sefton Brancker, who is on his way home from Rangoon in the D.H.50 (Siddeley Puma) flew in three days from Karachi to Baghdad, where he arrived on Mar. 1. He is expected home in about a fortnight.

Mr. Cobham's Tour.

The following is a brief account by Mr. Alan Cobham of his tour with Sir Sefton Brancker, up to the time of starting his return journey :—

Leaving Stag Lane on Nov. 20 we flew to Paris, then on to Cologne and Berlin. As usual on such occasions we received every attention from our friends the Aero-Lloyd at Berlin.

We then flew on to Warsaw. Sir Sefton was greeted with great enthusiasm and by the time we left the town some of the journalists seemed to consider the air route to India via Warsaw was an accomplished fact, why I don't know, evidently "the wish was father to the thought."

After Warsaw we got held up at Ivangorod in the centre of Poland owing to the fog. There is a magnificent aerodrome here 1,000 by 1,000 yards and an aircraft factory is being erected where they hope to build 300 aeroplanes and 1,000 engines per annum. The Polish Air Force estimates are twice as large as ours!

At Lemburg Sir Sefton went on by train to Bucarest owing to the perpetual fog, and it was on that particular railway journey that he first caught his bad cold. You have already heard enough about flying over the Carpathians, and I think it looked fairly simple when handed up to the public in the Press. In reality the less said about the real facts the better. It was an awful adventure all the way down, and getting caught out in fog in the mountains at the end of the trip was no joke. Anyhow it was not commercial aviation, for in my opinion flying ceases to be a commercial proposition as long as there is any adventure in it. Do you agree? [One does, cordially.—Ed.]

When we arrived at Bucarest the snow was three feet deep and by good luck the cleared avenue 30 yards wide and 300 yards long was the right way into the wind.

At Constantinople we developed a slight water leak on the Puma and so I decided to get a fresh block out. Incidentally this did not delay the flight as Sir Sefton went up to Angora by train and there had to wait a week while the Prime Minister journeyed from Smyrna to Angora to meet him. In fact I was waiting for Sir Sefton to return from Angora.

The Turks went out of their way to receive the British D.C.A. in the best manner possible. The flight over Anatolia was interesting although crossing the Taurus Mts. was another one of these "uncommercial stunts" about which we do not tell the public our innermost thoughts.

In French Syria we pushed along in low cloud and rain and finally got to Baghdad flying at about 50 feet under drifting fog banks.—Just like home.

I must say that the R.A.F. did everything they could to help us, especially at No. 8 Sqdn. who looked after the D.H.50.

At this time we were suffering from the Xmas habit. (Excuse me I'm very tired but must get this mail.) Our arrival at an aerodrome seemed to be an excuse to start Xmas festivities and after Xmas our arrival at other aerodromes seemed to be an excuse to revive Xmas. With the result that one started, especially in Baghdad, by taking nourishment at about 10 a.m. and this continued until the early hours of next morning

In Baghdad H.M. Forces are really as they should be, i.e., the R.A.F. is in command, and they have their *own army* and their *own navy*. (There is quite a small fleet of flat-bottomed boats on the River that have something to do with defence.)

After Baghdad we flew on to Shiba. We were escorted by Sq. Ldr. Stoddard himself. In fact two 9as appeared on the horizon and showed us into Shiba aerodrome. When we landed we were met by the entire squadron, who were nearly all in fancy dress although it was midday, but Xmas day. The Hucks starter seemed to be the chief means of transport and although there was already nearly a dozen pierrots and such like all over the poor old Ford the General was pulled amongst them and driven away to the mess.

The next day our departure was delayed and finally suspended owing to carburretor trouble. (A spider had crawled into the inner workings and caused all the trouble we eventually discoverered.)

After Shiba we flew on to Bushire and discovered that our 'drome was turned into a lake. However we got down on a strip of dry land. We had rain all down the Persian Gulf and of all the depressing holes on this earth the Gulf is the worst.

At Karachi we were received with open arms by Wing. Cmdr. Hicks, who is O.C. the R.A.F. depot for the whole of India. A. B. Elliott, my ground engineer, who incidentally went with me last year to Rome, also in the King's Cup Race and the flight to Africa, got to work and gave our Siddeley Puma a top overhaul and our D.H.50 a good look over. All were more or less in perfect condition.

While the D.C.A. went to Bombay I flew on to Jodhpur and very nearly distinguished myself by mistaking the polo ground for the private aerodrome. I nearly landed in the middle of an afternoon match. I spotted the open space and took it for granted it was the Landing Ground. I was gliding in to land when I happened to notice a band playing next a pavilion with a fashionable crowd gathered round. I thought it rather strange and just in time I guessed the mistake and opened out and climbed again.

From Jodhpur we went to Nasirabad and then on to Delhi. Again we were nursed by the R.A.F. Flt. Lt. Oliver took me into his own private hotel and arranged everything very well.

We then flew on to Allahabad and then Calcutta. Here Sir Sefton broke down and the doctors put him to bed. He narrowly escaped pneumonia, brought on by driving about in an open car at Delhi.

It was during my wait that the idea of looking at the possibilities of an air line to the hills was thought of and while up there I took the opportunity of having a look at Everest and Kinchinjunga.

Sir Sefton finished his convalescence in the boat to Rangoon and to-morrow I hope to fly with Elliott on board to Akyab and then on to Rangoon. After this we turn homewards.

We shall call at some of the native states on our way back through India and after Elliott has run over our 'bus at Karachi we shall beat it hard for home.

The homeward route will be as follows :—Up the Gulf to Akywan, Basrah, Baghdad, Ramidie, Desert route to El Jid, then by Nairn car route to Damascus, then to Bemit, Aleppo, Kane, Constantinople, Bucarest, Belgrade, Vienna, Nuremberg, Brussels and Stag Lane.

An Airline View.

The following letter from Mr. Wooley Dod, who is President of The Pilots' Federation, will be found entertaining :—

Sir,—Your editorial in the Feb. 18 issue of The Aeroplane is of quite abnormal interest, not alone for the subject and the presentation of your opinions on the problems confronting an air transport enterprise, but also for the style and manner in which you have given them to the world.

Dealing with the latter aspect first, one cannot help gaining the impression from reading your article that the inspiration of the moment came from a different source than usual.

One misses the old familiar phrases, the ready sneer at those who have not always received the WORD, and the unashamed adulation and fulsome flattery of those who did receive it hungrily and asked for more; nay, even perhaps opened a deposit account for a steady supply.

Let it not be said that the fire and sting of other days has entirely departed from The Aeroplane Editorial Office, and there are some faint traces of pristine vigour in certain passages of this article; but on the whole the relative moderation and even urbanity of the article are remarkable.

In conjunction with this altered feature there is another new departure, and it is with great satisfaction that one can say with perfect honesty that a great deal of it is logical and sound, at any rate in so far as it deals with generalities and broad principles

But mere didactic insistence will not uphold a purely nonsensical statement.

It is true enough that if a pilot, utter fool though he may be by Aeroplane standards, pulls back the joy-stick steadily and slowly in a glide, he will not stall his machine to a point where it falls completely uncontrolled, but will sink more or less rapidly according to its type, in a position that is roughly horizontal both laterally and longtitudinally.

This is as true of the "fatal" 34 as of the Fokker and of course depends not on the wing properties alone, but is explained as follows. (Correct me if I am wrong.)

The normal forward motion along the centre line of the machine is not entirely destroyed but becomes combined with a vertical motion at right angles to it, and though the lift of the wings falls below that necessary to counterbalance the weight of the machine, there is a parachute effect of the resistance of the plane surfaces that combines with the remnant of the lift reaction to retard the vertical acceleration.

But this position has to be maintained by the pilot by a conscious adjustment of the controls on all machines, as, fortunately, the designers of aeroplanes, not gifted with the omniscience of yourself, have constructed machines so that under these conditions there is a couple about the C.G. which causes the aeroplane to assume a nose down position at once, and to acquire in consequence a forward velocity normal to the wings that will restore the lift reaction.

There is no perfect type constructed or even conceivable of flap, slot or other gadget-winged aeroplane which will prevent it nose diving if only for 50 or 100 ft. following a stall in any other than an approximately horizontal position, say on a steeply banked turn or tail down, and fortunate it is that it is so.

For with the chimerical machine of your imagination should the loss of flying speed occur on a steeply banked turn, instead of nose diving, the machine would fall under the influence of g (and if you had your way of C. G. G.) in the same position to the earth.

The lower the forward speed at which sufficient lift is acquired to counterbalance the m.g. of the aeroplane the better, for the less the speed, after a stall, to recover its lift, but not necessarily will the vertical speed be less in a vertical pancake.

Even so, in your most frenziedly argumentative mood I feel sure you will not try to persuade anybody that the requisite lift can be produced with no forward speed at all.

Your correspondent W. H. S. and others who know better what they are talking about may safely be left to discuss technical questions in your paper, and should you confine your talent in the future to generalities and rough ideas, propounded with the humility of an ordinary mortal remembering that *"cujusvis hominis est errare"* and at the same time strive to curb your venomous and malicious tongue, it is conceivable that The Aeroplane paper may fill some respectacle place in the aviation world and not depend for its circulation on voucher copies.

(Signed) C. J. Wooley Dod.

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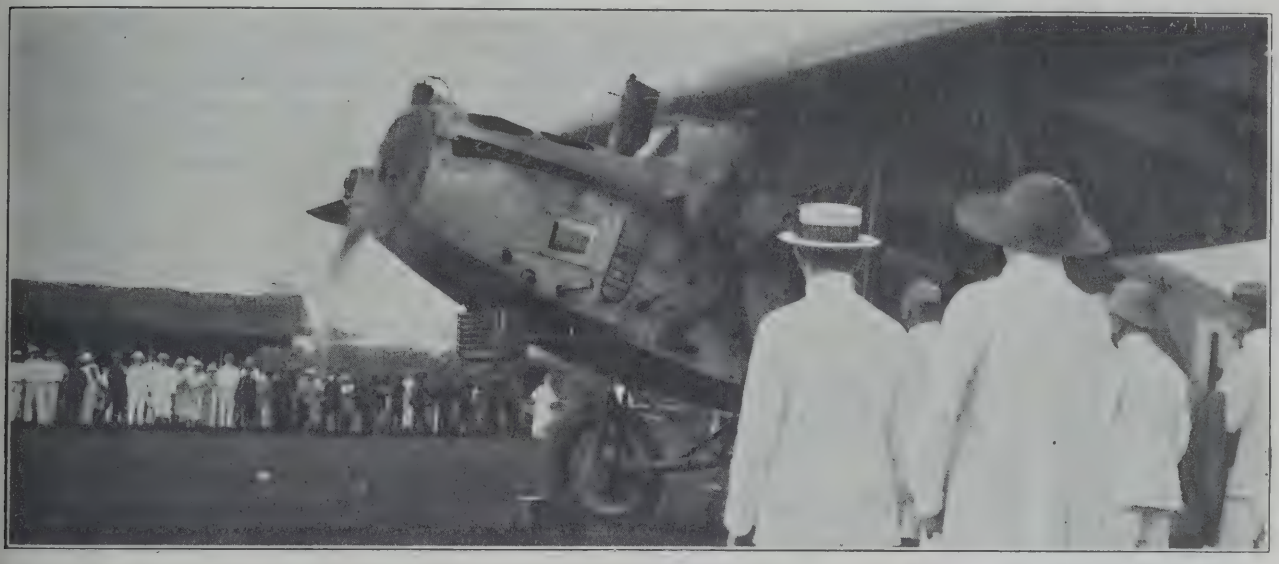
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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

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THE FLYING (ANGLO) DUTCHMAN.



IN THE DUTCH EAST INDIES:—Above is shown the Fokker F.VII (360 h.p. Rolls Royce Eagle engine) used by Mr. Van der Hoop on his successful flight from Amsterdam to Batavia, Dutch East Indies, preparing to leave Medan on the island of Sumatra on Dec. 23, 1924. Medan was the first stopping place after crossing the Malacca Straits from Asia into the Dutch East Indies. The photograph has been kindly sent by Mr. van Dossnyk of Tandjong.

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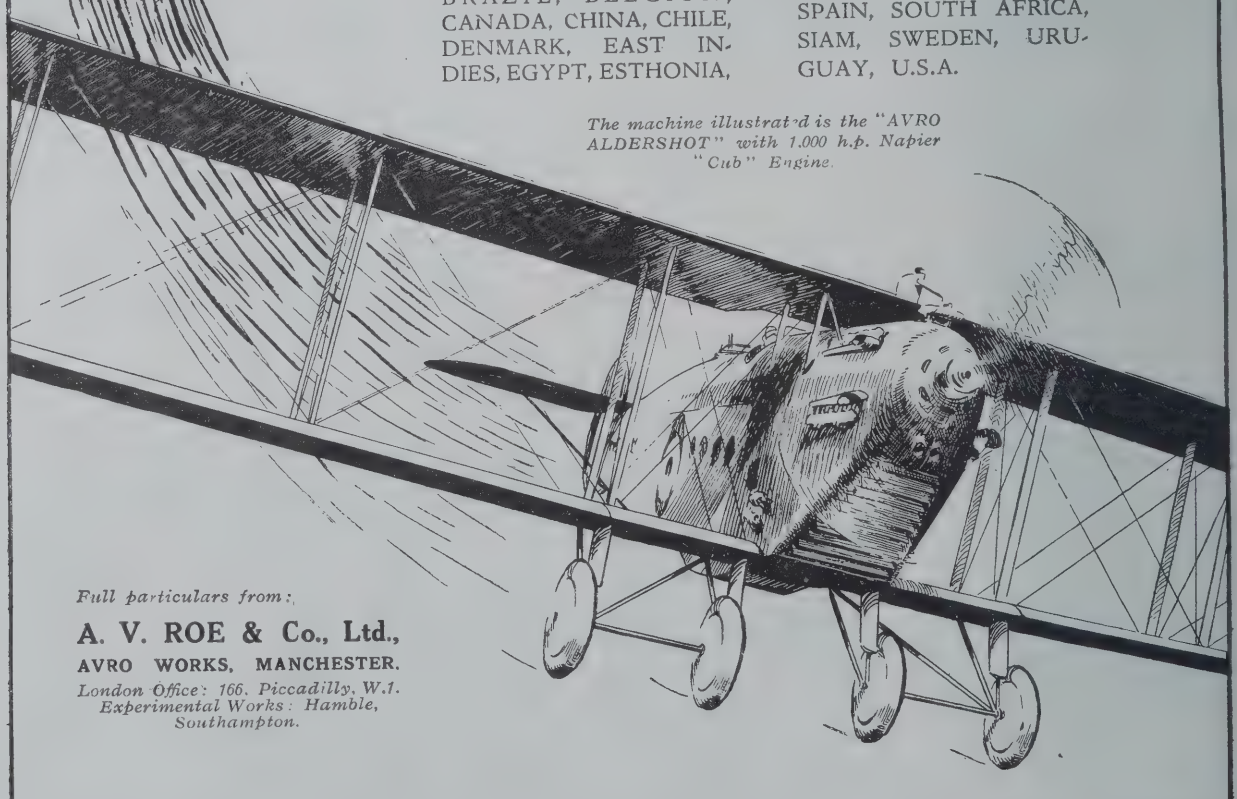
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ON SAFETY FIRST.

In the course of the Debate on the Air Estimates on Feb. 26 Sir Samuel Hoare, Secretary of State for Air, said that everything possible was being done to provide "Safety First" in the Air Force and, by implication, in Civil Aviation. This phrase deserves to be perpetuated among other notable motto-phrases produced from time to time by Sir Samuel such as that concerning "Control Without Occupation," descriptive of the work of the R.A.F. in Iraq.

The particular methods of increasing the safety of flying to which Sir Samuel referred are by diminishing the alighting speed of aeroplanes; by increasing the control of aeroplanes after losing the flying speed necessary to maintain them in the air (that is to say after stalling); by abolishing as far as possible the risks of fire after a crash; and by issuing to the Air Force parachutes capable of saving the lives of aviators in the event of aeroplanes breaking, catching fire or being shot to pieces in the air.

If something like a reasonable percentage of safety, say 90 per cent. or even 75 per cent. could be assured for every instance where an accident would otherwise occur from one or other of those causes then flying would be pretty nearly as safe as travelling by rail and probably a good deal safer than travelling by motor-car on English roads such as are inflicted on the country by the present system of departmental mismanagement. And there is no reason why such a degree of safety should not be reached within the next twelve months if only those in authority will take strong enough action to remove these impediments to progress which have prevented flying from becoming safe ever since flying began in this country and came under Government control.

A Repetition of History.

Many of those who are now employed in aircraft factories as draughtsmen, designers and still more of the younger generation who are now thinking of learning to fly do not, or can hardly, remember the Air Agitation of 1915-16 culminating in the Government Air Inquiry of 1916, when it was proved that the lives of a large number of our aviators on active service were lost through the obstinacy and stupidity of the so-called technical experts of the Royal Aircraft Factory at Farnborough who insisted on trying to standardise aeroplanes and engines of their own designs which were markedly inferior not only to the designs produced by the Aircraft Trade in England but to the aircraft actually used on active service by the German aviators.

As a result of that Air Inquiry the power of the Royal Aircraft Factory and its experts was considerable diminished and something like a free hand was given to the Aircraft Trade to produce new and approved designs without interference by the Government experts. But though the interference of the experts was reduced they still contrived to hinder the putting into production of new types. The result was that right up to the end of the War although there were always in England aeroplanes whose performance was superior to that of the best German machines those aeroplanes were never put into production and sent on active service until the Germans had produced something just a little better.

The command of the air which was won by the R.F.C. and by certain fighting squadrons of the R.N.A.S. at the end of 1917 was won by the superior skill and fighting power of British aviators and not by their superior equipment. The experts prevented the superior equipment from reaching them.

In fairness to Mr. Churchill, Admiral Sueter, and those who controlled the Royal Naval Air Service until the Royal Air Force came into being one must however qualify the foregoing statement by saying that certain types of machines, notably those built by the Sopwith firm, were produced for the R.N.A.S. free from all interference by the experts at Farnborough. There were some half-baked scientists and experts of the Farnborough type in Admiralty employ, but they were kept in their proper places by three of four experienced Naval engineers who knew that the first duty of an aeroplane is to fly and not merely to conform to aerodynamic theories.

These machines performed in such a way that the Naval squadrons mounted on them, and certain R.F.C. squadrons equipped with similar machines which were taken over by the R.F.C. just managed to save the moral of the R.F.C. when it had reached its most critical point and was on the verge of breaking. Also one must add that the production of the Bristol Fighters and the de Havilland series of reconnaissance machines in 1917 practically free from the interference of Farnborough finally re-established the moral of the Flying Corps and enabled it to maintain its superiority in the air until the Armistice in November, 1918.

The Official Principle.

One result of the Air Inquiry of 1916 was that the Government of that period laid down definitely the principle that the safety of the British Isles, and inferentially of the British Empire, against air attack lay in the maintenance of a strong and firmly established Aircraft Industry capable of producing in time of war aeroplanes of such quality and in such quantity as would enable our Flying Services to deal faithfully with any hostile air force which might be brought against them.

After the Armistice, when all orders for aircraft were cancelled, those in authority at the Air Ministry faithfully upheld this principle. In spite of financial difficulties successive Air Ministers under Coalition, Conservative and Labour Governments have maintained the principle as a fixed policy.

Some twenty firms of constructors of aeroplanes and aero-engines who proved during the War 1914-18 their ability to make satisfactory aircraft matériel have been kept alive by a skilful allocation of orders between them. The natural inclination of every English manufacturer to produce good work has had the result of establishing British aircraft as being beyond dispute the best made in the World and the quality of these aircraft has been still further improved by the officials of the Aeronautical Inspection Department, who on the whole have worked on very friendly terms with the Aircraft Trade.

Therefore we in this country may be content with the progress that has been made in one direction, namely that the actual material and construction and detail design of British aircraft are the best in the World.

The Reversion to Type.

But we have no reason to be pleased with ourselves about our progress in other directions. The performances of our machines are on the whole very much inferior to those of foreign Powers and we have gone a very little way indeed towards securing safety for our aviators in those directions indicated by Sir Samuel Hoare. This lack of progress is due entirely to a fresh growth of the influence or power of the experts at Farnborough.

Probably very few of those experts are the same individuals who came near bringing disaster to the R.F.C. during the War. One imagines that quite a large number of them are too young to have had much influence for evil seven or eight years ago. Therefore one would like to state quite clearly that one is not attacking any individual or even any group of individuals. In fact one does not even know by sight or by name any one of these experts who do so much to clog the machinery of progress. One is merely dealing with a type of being which seems to exist everywhere when a little brief authority is put into the hands of underpaid officials.

Writing of this same type during the Air Agitation in 1916 or thereabouts one described it as being of that pseudo-scientific species among whom the conversational or aspirated *h* rather than the scientific *x* is the unknown quantity. And there seems to be little alteration or improvement as the years pass.

Where the type is discovered, how it is selected or why it is appointed one does not profess to know. But taking it all round it is of the kind which goes into minor positions in Government employment because no commercial firm in

its own line of business would think of giving it a job. Whether it is the product of suburban polytechnics, of provincial universities of the minor kind or merely the result of correspondence schools one has not discovered. But the type is unmistakable.

To people of this calibre is committed the task of overseeing the designs and experimental productions of highly-skilled and generally highly-paid men in the employment of the great aircraft firms. And before these trade designs can be passed as suitable for production for use by the Royal Air Force they have to be approved by these minor officials.

Naturally such officials are much more concerned with holding their jobs than with anything else. Therefore it is obvious that they will not take any personal risks. Their motto also is "Safety First." Consequently they will seldom commit themselves to a definite statement as to whether any particular design is either good or bad.

If they say it is bad then the firm which is responsible for the design may prove that the official is wrong. If he should approve the design it may fail and then he will be blamed for approving it. Consequently the inevitable tendency through all these little departments is to temporise and temporise and avoid a definite decision one way or the other. This is one cause of delay.

Vaulting Ambition.

But there is yet another cause. One does discover among these semi-intelligents here and there a person with mild ambitions. In such cases when a new design for any detail in an aeroplane or an engine is submitted such an one may be smitten with the idea that he can improve upon it. Therefore he will hold up the trade design and will proceed to produce something like it which he claims to be an improvement.

In such case the trade design will be held up, neither approved nor disapproved, while the sub-department tells the Department of Experiment and Research at the Air Ministry that it is not worth while to proceed with the trade design because this particular department will shortly produce something better, or that it is experimenting on similar lines itself and should be allowed to complete its experiments before money is spent on the trade design. In some instances even the actual trade design is taken and the little officials themselves proceed to experiment with it hoping that they may induce their chiefs to add their own alterations to the trade design and allow them to take out additional patents or at any rate to have themselves connected in some way financially with the altered design.

There is an almost infinite variety of movements by which these minor officials and their sub-departments either seek to exalt themselves or endeavour to avoid individual responsibility. And all this self-seeking intrigue holds up progress with the result that we are now several years behind the stage which we ought to have reached in producing safety in flying.

Substantiating the Charges.

Having made these charges, which are purely destructive criticism, it is naturally necessary to substantiate them. There is little use in knocking down a house unless one is prepared to build a better one in its place.

That can best be done by taking the specific points mentioned by the Secretary of State in his speech and dealing with them one by one.

The control of aeroplanes after stalling may be considered as the same thing more or less as the question of slow landing. It is true that a skilled pilot given a clear approach free of trees, buildings or other obstacles to a very small patch of suitable ground can put even a fast machine onto the ground almost at a standstill by flying it close to the surface and then stalling it within a few feet of the ground so that it drops flat, with very little forward speed, before it has time to stick its nose down and dive.

But this is not what is wanted either in slow landing or in the control of a stalled machine. What is really wanted is a machine which, having a fairly high flying speed of, say, in the region of 120 to 150 miles an hour, can be made to fly on the level, that is to say, without losing height, at about 40 or 45 miles an hour, and below that speed will sink rapidly vertically but with a very slow forward speed remaining all the while under proper control.

This control of an aeroplane which is sinking and not merely gliding forward at its natural angle is what is called the control of a stalled aeroplane.

The Controlled Stall.

Now the whole point is that though it is possible with a great many aeroplanes to stall them and make them sink and still hold them from nose-diving so long as they are going straight forward with the wings horizontal the danger is that, if a puff of wind throws one wing down and the other up, any effort to put the wings again into a horizontal position puts a drag on the lower wing and so puts the machine into a spin which is followed by a nose-dive, which nose-dive will last for anything between 100 and 1,000 feet, according to the type and weight and speed of the machine, before it can be got under control again.

If it were possible to stall a machine, let it sink, let it roll over onto one wing-tip and then get that wing up again, still keeping the machine on a straight path, or if it were possible deliberately to turn a machine with one wing down in a stalled position so as to come down in a very small spiral path to reach a small landing ground, then we should be a very long way towards securing the most important factor in assuring safety in flying. And one states definitely that progress in this direction has been held up either by the stupidity or obstinacy of our technical experts.

Impossible Perfection.

First of all one would like to say that even given such necessary controls nobody could guarantee absolute security from accidents. Locomotives still break or run off their rails. But, given such controls, practically every fatal accident which has happened of late could have been avoided.

To take an analogy from motoring let us suppose that there was a certain type of car which had an inherent tendency to skid violently on every possible occasion and that another type of car behaved normally and only skidded under considerable provocation. Obviously the man who bought the car which was prone to skid would be a fool and anybody who compelled him to buy it would be a criminal.

In fact one may produce a still closer analogy in the construction of practically every main road in England to-day. It is possible to produce roads on which no motor-car will skid under any circumstances, and yet the curious combination of fools and/or knaves who are responsible for our main roads insist on giving us roads on which no motor-car can help skidding if they happen to be wet.

That is roughly the position of all aeroplanes to-day. Every aeroplane may nose-dive and/or spin after stalling but it is possible to produce an aeroplane which can be made almost proof against either.—And this in spite of the opinion expressed last week by a member of the Pilots' Federation.

Slow Landing.

As to slow landing one has only to go back to the introduction of the Fairey flap wing on the Fairey seaplanes before the end of the War in 1918. Those flaps properly used made it possible to land the machine some seven to ten miles an hour slower than it would have done without the flaps. Also it made it possible for the machine to get off the water or off the ground at a correspondingly lower speed.

From the start the technical experts did everything they could to disapprove of the use of flap wings. They objected to the mechanism by which they were operated, they objected that they gave increased trouble to the pilots, they objected that they were wrong mechanically and they objected that they were wrong aerodynamically. But in spite of them all Mr. Fairey stuck to his guns, or rather his flaps, and proceeded to work out in conjunction with the flaps a system of tail adjustment so that when the flaps were wound down the tail plane was wound up and so kept the machine in proper trim fore and aft. This again brought the objection that it added complications to the machine.

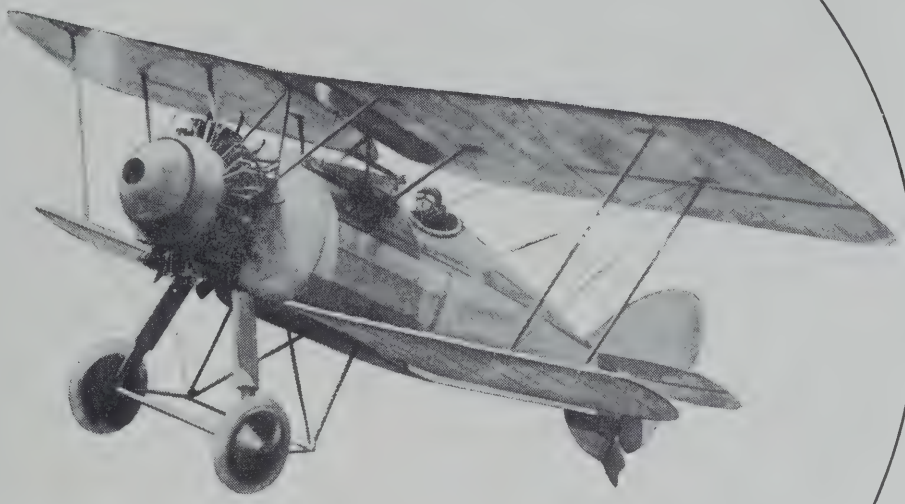
But the fact remains that the machines did as their designers intended them to do. And we have to-day in the R.A.F. deck-flyers, land-bombers and seaplanes all equipped so that they can get off with a short run and a heavy load and can alight slowly. Yet it took five years from the introduction of the flap system before the experts were defeated and the practical pilots had their way. And even now not a single passenger-carrying machine has been built with those flaps and tail-gears.

But the flap and tail-gear only deals with quick starting and slow alighting. Its designers do not pretend that it gives control while the machine is sinking after a stall. It is true that the Flycatcher does remain under control when stalled, but that is chiefly due to carefully designed side areas and the use of a very big rudder.

The Slot Control.

What is a far worse case in a way is the neglect of the development of the Handley Page slot. Personally one is not prepared to say yet whether the Handley Page slot is the happy issue out of all our dangers whenever they afflict us or whether it is not. The point is that it might be. And because it might be then the experts at the Royal Aircraft Establishment at Farnborough deserve to be dismissed in a body for neglecting to discover whether the Handley Page slot is or is not the right way to control the stalled aeroplane.

There is in existence to-day, for everybody to see, a report by the wind-tunnel staff of the National Physical Laboratory at Teddington, dated sometime early in 1922, stating definitely that their experiments showed that the Handley Page wing-slot operating in conjunction with an aileron definitely



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gave promise of permitting the proper lateral control of an aeroplane when flying below stalling speed.

That in itself is bad enough, for the slotted wing was made known to the public by Mr. Handley Page in a lecture at King's College on Feb. 28, 1920, and on Mar. 3 The Aeroplane taking one of its usual prophetic gambles published an article on it entitled "On a Possible Revolution in Aviation." Thus it will be seen that it was two years between the introduction of the slotted wing and a report upon it by the N.P.L.

On the strength of the N.P.L. report the Authorities at the Air Ministry handed the question of the slotted wing over to the experts at Farnborough for further investigation on an actual flying machine, or what is called a full-scale test. Somewhere during 1924 some sort of a report was issued by the Farnborough people, presumably to appease their chiefs and keep them quiet for a while, and now one learns that in February, 1925, a standard Avro fitted with Handley Page slots working in conjunction with the ailerons has at last actually been flown.

That is to say, exactly four years from the announcement of the existence of the slot theory, which means considerably more than four years since the Handley Page technical staff worked out the slot idea, an aeroplane with a rough experimental gear fitted thereto has at last been produced by the Royal Aircraft Establishment at Farnborough on which the Government spends something over half a million pounds per annum.

One is quite prepared to admit that if what is claimed for the Handley Page slot is justified that result alone would be extraordinarily cheap if half a million per annum had been spent for four years on producing it. £2,000,000 would be a very low price to pay for the commercial success of aviation through this slot control.

But the tragedy of the whole thing lies in the fact that if an ordinary experimental workshop in an aeroplane factory in charge of a competent engineer has been turned on with a staff of say 25 men to work night and day on developing the operating gear of these slots and to experiment with a machine in charge of an intelligent test pilot, the whole thing being put through as an ordinary commercial "rush job," the work over which our Government experts have taken four years could quite easily have been done in six months.

The R.A.E.'s Responsibility.

Writing as one who has worked at the bench and worked in a drawing office, and been mixed up with various kinds of factories in one capacity or another for some twenty years before aviation began, one can say without much fear of contradiction from a practical workshop boss that anybody who could not do in six months what the Royal Aircraft Establishment has taken four years to do would not be worth his keep as a floor-sweeper in a factory. And now at the end of the four years we still do not know whether the slot and aileron combination will give the control which it is supposed to give or whether it will not.

If it does give the control which is claimed for it—as one believes that it does, or at any rate as one believes that it can be made to do—then every pilot and every passenger who has been killed through stalling and spinning in an aeroplane since the end of 1922 has been just as definitely murdered by incompetent Government officials as were those gallant officers of the R.F.C. who were killed fighting in France on the inefficient machines which were inflicted on them by the intrigues of the staff of the Royal Aircraft Factory.

And if the slot and aileron control does not do what is claimed for it then we ought to have known that such was the fact two years ago. Then Government time and Government money would not have been wasted on further experiments.

Air Council Action.

We have now arrived at the point where it is time for the Air Council to take direct action in matters of this kind. Every bit of experimental work of this nature, that is to say all experimental work on which progress depends, should be put into the hands of manufacturing firms whose commercial success depends on getting the job done as quickly and as cheaply as possible.

The Air Council doubtless forgets that the existence of many of its own experts depends not on getting a job finished as soon as possible but on making the job last as long as possible in that the more experimental work they can show and the more reports they can send in on that experimental work the more they are likely to acquire the reputation, albeit ill deserved, of being earnest and whole-hearted workers in "the field of research"—about which so much clap-trap is talked.

The Fire Danger.

From this question of controlled stalls and slow landing we may now progress to the question of the prevention of fire In this direction precious little has been done.

In February, 1922, a competition was held to discover a species of aeroplane tank which would be crash-proof to the extent of not allowing the petrol to escape and catch fire in a crash. Certain types of tanks were discovered which were fairly satisfactory, but after all the bursting of a tank in a crash is seldom the direct cause of a fire. The escape of petrol through a broken pipe from a crash-proof tank is just as likely to cause a fire as if the tank itself burst. And of course the best way of preventing a fire after a crash is to produce an aeroplane that does not crash at all. Prevention is better than cure.

But, crash or no crash, so long as petrol is used there will always be the danger of fire in the air. The risk of such fire has been reduced by fitting fire-proof bulkheads between the engine and the rest of the machine and to that extent



SNOWDON FROM THE AIR.—A photograph by the Surrey Flying Services of the summit of Snowdon seen from an aeroplane. The railway and station can be seen, and also the hotel. When an aeroplane can alight by the hotel and start thence we may consider that we have achieved safety in aviation.

742 hours testing

under the most strenuous conditions that can be devised, viz. : the British Govt. type tests

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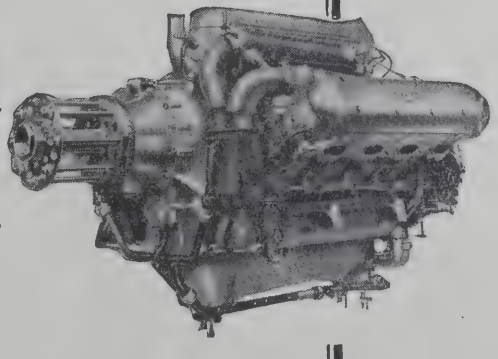
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certain very limited amount of progress has been made towards safety.

For years we have been hearing about the wonderful results which the Air Ministry experts hope to get from the direct injection of heavy oil instead of petrol, more or less on the principle of the Diesel engine. Three or four years ago one was shown a single-cylinder experimental unit at Farnborough which promised to do great things with direct injection of petrol. But apparently no real progress has been made at the R.A.E. since then.

The Beardmore firm has, one believes, been encouraged to a certain limited extent to experiment with a heavy oil engine and though the results have been kept quiet it is said that they are at any rate promising. But surely, if the Air Council were really intent on securing the utmost progress in the shortest possible time, experiments in this particular direction should have been entrusted to three or four different firms and each firm should have been encouraged to spend as much money as it could on hastening those experiments.

Parachutes.

Lastly we have the question of parachutes. During the War, as any fighting pilot can bear witness, numbers of German aviators escaped death by descending in parachutes from machines which had been shot to pieces or set on fire in the air. During that period, we in this country were experimenting with various parachutes almost entirely of the kind known as static, that is to say in dropping from the machine, whether aeroplane or airship or kite balloon, the user of the parachute had to fall away and pull out above him a parachute folded in a case fixed into the machine or at any rate attached firmly to the machine. With the German type of parachute the man fell absolutely clear of his machine and then released his parachute from a pack carried on his back.

Some people in the R.A.F., chiefly commanding officers who did not fly, decried the use of parachutes because they held that a man with a parachute would be tempted to quit his machine in the middle of a fight instead of fighting to a finish. But the wiser officers argued that a man who had at least a sporting chance of getting clear with a parachute from a wrecked or burning machine would enter into a fight with a lighter heart and a better nerve than a man who knew that he had no such chance of escape.

The War ended before this question was definitely decided, unfortunately, and therefore the question of parachutes was practically dropped except for the efforts of private firms or individuals in this country to endeavour to push the claims of their own particular types of parachutes. A few enthusiasts in the R.A.F. still endeavoured to persuade the authorities to continue experiments with parachutes, but practically no progress was made and to-day over six years after the Armistice the R.A.F. is still without parachutes and quite a number of men have been killed who might have been saved if they had been equipped with parachutes.

What America Has Done.

In America on the other hand both the Navy and Army Air Service continued to experiment with parachutes and to-day every test pilot in America who flies a new type of machine, and every pilot and passenger (including the trans-Continental Air Mail pilots) who undertakes a long cross-country journey inevitably carries a parachute.

Now the reason why the R.A.F. has not got parachutes is again simply the stupidity or obstinacy of the Air Ministry experts. Whether somebody on the inside has been trying to produce a parachute of his own in imitation of the American parachutes, or whether somebody is interested in some other type of parachute, one does not pretend to know, but the fact remains that at any time during the last two years the R.A.F. could have had in regular use the American type of parachute developed by Mr. Irvine, of Buffalo.

Those who defend our experts may claim that there is no proof that the Irvine parachute will open and save life one hundred times out of every hundred parachute drops, and that our experts are justified in desiring 100 per cent. efficiency before they approve any particular type of parachute. Personally one would rather have a parachute which could only be depended upon to open once in every two drops than have no parachute at all. A 50 per cent. efficient parachute is definitely better than none.

Expert Objections.

One of the most absurd objections which one has met from the experts who are against the Irvine parachute, or any free parachute, is that a gunner carrying a parachute pack on his back would never be able to operate his gun in a gun-ring because of the extra air pressure which would be put upon the pack. The experts were either ignorant of the method of using the Irvine parachute or else were deliberately distorting that method with the intention of deceiving their chiefs. As a matter of fact, the Irvine parachute is used as a seat cushion and is neatly attached to the seat of the trousers or Siccot suit, and consequently is right down inside the cockpit of the machine where it is not exposed to the air when the gunner stands up inside the gun-ring.

In any event, objection after objection has been raised by the experts to the use of this free type of parachute, and all kinds of efforts have been made to foist on the R.A.F. aviators types of static parachutes any of which would be perfectly useless to a pilot involved in the wreckage of a machine which had collapsed in the air during a test flight or had been shot to pieces in a fight.

Another objection was that a badly-wounded man might pitch himself overboard from a machine which had caught fire in a fight and pull a static parachute out of its case attached to the machine, whereas he might not be able to release a free parachute after he had cast himself overboard. The answer to that is very simply that if a man were so badly wounded that he could not pull the string which releases a free parachute from its pack, he would certainly not have the strength to throw himself overboard.

Thus it will be seen that in the matter of parachutes, as in all the other matters which go towards making flying safe, progress has been held up by the Air Ministry's own experts; whereas if experiment and development had been left to the Trade and had been financed on a reasonably commercial basis by the Air Council we should have been anything between two and five years ahead of where we are now.

Purely as an expression of personal opinion on the subject of parachutes one would like to state that no test pilot should ever be allowed to fly a new type of machine except when wearing a free parachute of a type which has already justified its existence.—Which is not at all the same thing as being a type approved by the Air Ministry experts.

That is to say, the pilot should at any rate be given the choice of wearing an approved type or one of which he approves himself. Any reasonably cautious pilot would prefer to wear a parachute, and a reckless pilot ought to be made to do so.

What Will the Air Council Do?

At the finish it may be seen that the progress of aviation towards safety ultimately turns on the question of whether the Air Council intends in future to squander its half-million or three-quarter million pounds per annum on the Royal Aircraft Establishment at Farnborough and on the assorted Air Ministry officials who are now housed at Farnborough although perhaps not actually members of the staff of the R.A.E., or whether it intends to spend considerably less money on ordering and paying for experimental work to be done on a commercial basis by the firms which compose the Aircraft Industry.

Every development in what is commonly called human progress, that is to say the outward accessories of life, has actually been accomplished as a commercial proposition in ordinary commercial competition, and not with State aid. Therefore one strongly commends to the attention of the Air Council the advisibility of considering whether it would not be better in future to devote the major portion of the money available for research to financing research by the Aircraft Industry.

It will be interesting to see what steps the Air Council takes in future to accelerate the progress of research along these lines with the idea of producing "safety first."—

C. G. C.

(To be continued.)

An Air Line Directory.

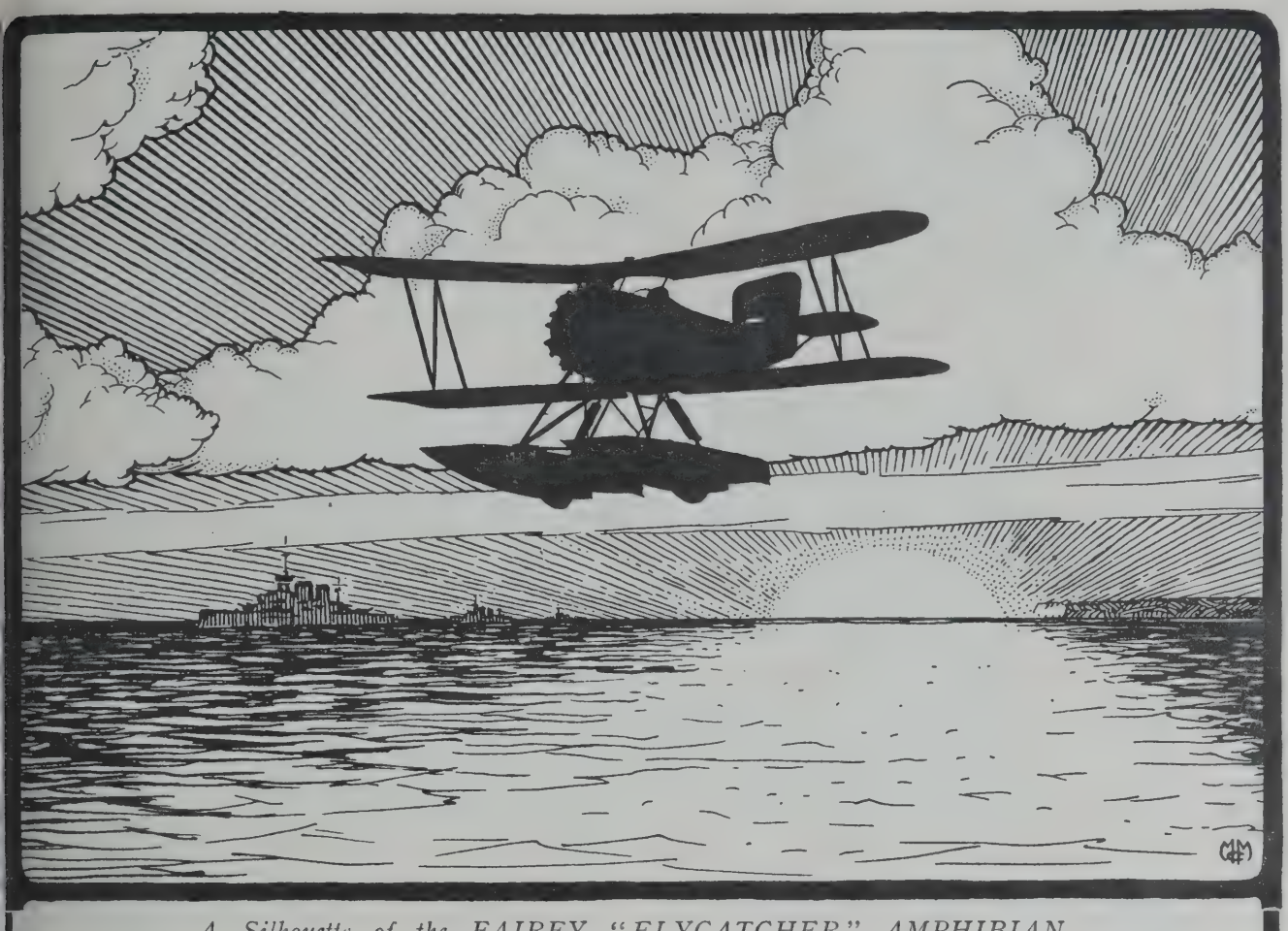
The International Chamber of Commerce has issued a very interesting Supplement to their Quarterly Journal giving a schedule of International Air Lines showing the route operated by each line, the name and address of the Company, and adding a few useful particulars in connection with the line.

One believes that this is the first list of this kind to be published.

The pamphlet opens with a few general remarks on the uses and objects of air lines, and the conditions necessary for an air line to be of commercial interest. The whole is set out in a most clear and easily comprehensible tabular style and should be just as useful to actual operators of air lines as to those who are merely in search of information. As the pamphlet says, "the only lines quoted are those for which statistical information is available: a guarantee that they are actually functioning."

Readers of this paper who would be interested to have a copy of this Supplement can obtain one by applying to the Assistant Secretary, Mr. B. B. Elliott, The International Chamber of Commerce, British National Committee, 14 Queen Anne's Gate, Westminster, S.W.1., enclosing a penny stamp for postage.

These copies are not issued for sale but the Department is willing to supply their few extra copies to anyone interested.



A Silhouette of the FAIREY "FLYCATCHER" AMPHIBIAN.

The Fairey Flycatcher is one of the most extensively used single-seat fighter aircraft in the service of the Royal Air Force.

It will be recollected that it was land type Flycatchers which came to the rescue of the "Merchantman," "John Henry," at last year's R.A.F. pageant: the Flycatcher land type machine is converted to an amphibian, as depicted above, by a change of undercarriage.

A notable feature of both land and amphibian type Flycatchers is their remarkably low landing speed, which makes them especially suitable for alighting in restricted areas such as a ship's deck.

The Fairey Aviation Company Ltd.

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Telegrams: "Airily," Hayes. Telephone: 136, 137, 138 Hayes, Middx.

Works also at:
HAMBLE, near SOUTHAMPTON.
Telegrams: "Airily," Hamble. Telephone: 17 Hamble.

THE AMERICAN AIR AGITATION.

The first round in the fight for an American Air Service has been won, as is usual in all fights for reform, by the forces of reaction. According to the newspapers of Mar. 7, General Mitchell, the leader of the reformers and the storm-centre of the agitation, has been relieved of his post in the Army Bureau of Aeronautics.

The Times correspondent at Washington, cabling on Mar. 6, said :—

The prolonged wrangle with regard to the United States air defences came to a head this morning, when the President forwarded to the Senate the nomination by Mr. Weeks, Secretary for War, of Colonel James Fechet as Assistant Chief of the United States Army Air Service in succession to Brigadier-General Mitchell, whose appointment terminates at the end of this month.

Colonel Fechet rose from the ranks and saw service in 1898 at Santiago, in 1911 in the Philippines, and in 1916 in Mexico. He was commissioned in the cavalry in 1900, and qualified as an air pilot in 1917, but he saw no service in Europe.

In a brief statement Brigadier-General Mitchell discloses several attempts which have been made to remove him from office, particularly before the 1921 bombing experiments against battleships. He points out that the participation of the United States in the war was so short that she was unable to replace the old bureaucrats controlling the national defences by more efficient and younger *personnel*, hence the present backwardness of her aerial development.

General Mitchell again urges the co-ordination of the national defences under a single department with a council consisting of the Secretary of State, the Secretary of the Treasury, the Secretary of Defence, and Under-Secretaries of Land, Water, and Air, thus co-ordinating defence, foreign policy, and national finances.

The New York correspondent of *The Daily Telegraph* cabling on Mar. 6, said :—

Shortly after the announcement to-day that Brigadier-General Mitchell had been relieved of his post as assistant chief of the Air Service following his public utterances in the national controversy over air power, a spectacular demonstration was given at Langley Field, Virginia, of the destruction of a simulated battleship target by almost every form of aerial weapon the army possesses. This was part of the War Department's answer to the contentions that America was lacking woefully in defences against invasion, and backward in its preparation for offensive aerial warfare.

General Mitchell himself was present, and while he seemed to enjoy the demonstration he commented : "It does not mean much, because on this little field you have seen everything America possesses in the way of air power, and that is not enough by a long way." To the spectators it seemed as if for two minutes hell had been let loose from the blue heavens, as ten pursuit planes flying at terrific speed swarmed over the white target and dropped their powerful explosives.

General Mitchell reverts to the rank of colonel on April 27.

This demonstration is precisely the futile kind of thing which used to be done by the reactionary authorities in England during the air agitations of 1916-17 which ultimately brought the R.A.F. into being, so the omens are favourable. Incidentally "pursuit planes" acting as heavy bombers seem to indicate excellently the mentality of the people whom the reformers have to fight. The reactionaries may twist and turn, but they do not carry much weight against a fixed intention.

In any case General Mitchell is not the kind of man to be put off his game by a slight set-back such as being relieved of his post and reverting to his substantive rank. He will probably return to the fight all the stronger for the check. And he has behind him a body of opinion which must in the end overwhelm the reactionaries.—C. G. G.

International Courtesy.

It is announced that arrangements have been completed whereby the American Assistant Military Attaché in Paris (Major Walsh, U.S.A.A.S.) will be permitted to fly French Service aircraft, and by a reciprocal courtesy the French Air Attaché at Washington (Capt. Thénault, one-time commander of the Lafayette Squadron) will be permitted to fly American Service aircraft at Bolling Field.

The Helicopter Competitions.

The Air Ministry announces that none of the entrants for the Air Ministry Helicopter Competition having so far submitted a machine for test, arrangements will be made, according to the provisions of the original competition, for a second competition to be opened, terminating on April 30, 1926. The prizes and general conditions will be as in the original offer. All entries much reach the Air Ministry not later than Apr. 30, 1925, and entrants for the original competition must enter afresh if they still desire to compete. Entry forms and full particulars can be obtained on application to the Secretary, Air Ministry, Adastral House, London, W.C.2.

[There seems no reason to modify the opinion expressed on the occasion of the original offer, that the Air Ministry is in no serious danger of losing the £50,000 involved, but that if anyone does succeed in complying with the conditions he will have fully earned the prize.

Could not a few more competitions be devised on similar safe lines?—say, prizes of £10,000 for a light aeroplane engine which will satisfy the yearnings of the Air Ministry Engine Section in regard to superchargers and multiplicity of cylinders, and yet sell at a price of under £1,000, and one of £100,000 for a commercial aeroplane in which C. G. G. would willingly fly?—W. H. S.]

[And it would be cheap at the price, for then we should have secured Safety First.—C. G. G.]

Parachutes Again.

Two aircraft belonging to the U.S. Army Air Service collided while flying at 4,000 feet over Kelly Field, San Antonio, Texas. The machines were locked together and fell in flames, but both pilots succeeded in freeing themselves from their machines and landed by means of parachutes, neither of the pilots being injured in any way.

Although there are previous cases in which the crew of one machine has escaped from a collision by means of parachutes, this is the first case in which the crews of both machines involved in a collision have been saved by the parachute.

Continental Business.

An engineer, formerly an officer in the R.F.C. and R.A.F. who has a good business connection among aeronautical people in Central Europe, would like to get in touch with firms making aeronautical instruments, accessories, component parts and material with a view to doing business in such products with European Governments and aircraft manufacturers. Any firms who would like to be put in touch with this gentleman are invited to communicate with the Editor of The Aeroplane marking their letters "Continental."

The Oxford Arctic Expedition.

The various cinematograph films taken by the Oxford Arctic Expedition during their explorations from Spitzbergen in the late summer of 1924 were displayed for the first time at Oxford on Feb. 16. On the opening night Mr. George Binney, the leader of the Expedition, delivered a lecture in connection with the film.

The film will be shown in various parts of England in the future and readers of this paper are strongly recommended to go and see it. A correspondent of The Aeroplane who saw the film in Oxford writes as follows :—

The film was really wonderful and I would not have missed it for anything. Apart from its historical interest it is a really beautiful and amusing production. The photography is excellent and extraordinarily clear. Possibly the atmosphere is specially suitable under Arctic conditions but anyhow the pictures, whether long distance or close-up, were astonishingly vivid. (Personally I suffered alternately from sea-sickness, mortal funk and frost-bite in my toes.)

One of the things that struck me particularly was the astonishing youth of the members of the Expedition, such a happy crowd too—and healthy. There were only two casualties among the lot, Hanssen the aviator with pneumonia (the other aviator was Gib Ellis, late R.N.A.S.) and Lowe with blood poisoning. That was almost at the end of the show, too, and neither of them died.

The seaplane, an Avro Lynx, G-EBJD, certainly did its share of the business and naturally was able to penetrate furthest North of all, the most northerly point apparently being latitude 18.15 N.—less than 600 nautical miles from the Pole. (I cribbed all that from the sub-titles, needless to say.)

They had two mishaps, a forced landing in the sea on their first expedition after establishing camp, when they were afloat for more than a day, and after nearly giving up hope were rescued by three Norwegians in a small boat under fearfully dangerous conditions. (We did not see that, of course, they told it in the sub-titles.)

The second mishap was a crash on land later on when the machine was pretty badly damaged—one wing especially looked rather cheap.

Pretty resourceful lot they must have been, too, because they did all their repairs and apparently made a good job of them. The first time, when they alighted in the sea, the cause of trouble was a broken piston. (Do you imagine they carried a complete range of spares with them? They must have done I should think.)

Eventually on its final trip North the seaplane reported that the ice was beginning to close down, so they made a bolt for it and got back to Tromso—or whatever the unnatural place was—without mishap. They had to chop through the ice sometimes though.

The scenery (Do you call it scenery in the Arctic Zone, by the way? It sounds inadequate somehow) was wonderful—and terrifying.

The producer was very wily though. When he had got his audience fairly gasping with wonder and incredulity with pictures of glaciers nine miles wide and walls of ice ninety feet high and of indefinite length (the coast line of North Eastland explored over-land with dog sleighs), he suddenly switched off onto an absurd camp incident or a close-up of curious bird life, and so restored one's balance for one, also incidentally keeping one from getting blasé.

I am not attempting to give routes and dates and things. I could not get them all down anyhow, they switched off the sub-titles so quickly.—M. B.

Here is a hint for producers of the film. But from the foregoing it may be judged that the film is well worth seeing and one hopes that wherever it is shown the readers of The Aeroplane will make a point not only of going themselves but of inducing their friends to go partly for their own education and partly in support of a good cause, namely, the finances of the very gallant little crowd who composed the Oxford University Arctic Expedition.—C. G. G.

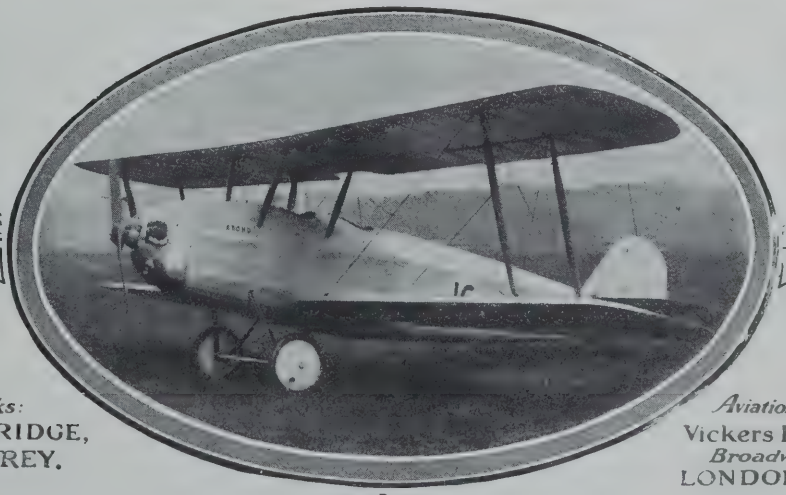
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THE ROYAL AIR FORCE.

The London Gazette.

Mar. 3.

General Duties Branch.—The following Plt. Offs. are promoted to the rank of Flg. Off. (Feb. 15):—G. R. M. Clifford, R. A. P. Roberts, T. B. Prickman, H. M. Mellor.

Wing Cmdr P. S. Rickcord (Commander, R.N., retd.) remains on loan to the R.A.F. for a further year (Mar. 1).

The following Plt. Offs. on probation are confirmed in rank (Jan. 8):—H. B. Barrett, S. F. Bell, W. A. Cooke, J. E. Davies, L. A. Eggiesfield, A. C Evans-Evans, H. R. Gillespie, W. E. Gray, M. H. Jenks, D. J. Lloyd, H. Miller, C. H. Morgan, R. W. Steele, A. J. Thompson, C. W. L. Trusk, H. Walker, D. G. Wilson. Flt. Lt. D F. FitzGibbon, D.S.C., is transferred to the Reserve, Class C (Feb. 28).

Stores Branch.—The following are granted perm. comns. in the ranks stated (Mar. 4):—Flt. Lt. F. H. Sims; Flg. Off. C. Littlejohn, M.M.

Flg. Off. R. D. Lambert is placed on half-pay, Scale A (Feb. 16).

Accountant Branch.—Flg. Off. J. R. Bond is transferred to the Reserve, Class C (Mar. 5); Flg. Off. C. L. P. Mullany is removed from the R.A.F. (Feb. 20).

Medical Branch.—The following are granted S.S. comns. as Flg. Offs. for three years on the active list, with effect from, and with seniority of, Feb. 18:—L. C. Palmer-Jones, M.B., T. W. Wilson.

Reserve of Air Force Officers.—H. A. Seaby is granted a comn. in Class A, General Duties Branch, as a Flg. Off. on probation (Mar. 3).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—J. M. S. Taylor (Feb. 26); J. Fairbairn (Feb. 28). The following are confirmed in rank (Mar. 2):—Flg. Offs.—M. D. Allen, R. Y. Bush, E. S. Clark, L. P. Openshaw, E. H. Stuart. Plt. Offs.—J. S. Napper, D.C.M., H. C. Norman. The following Flg. Offs. are transferred from Class A to Class C:—W. A. Rochelle (Mar. 3); E. D. Salthouse (Mar. 3); I. Welby, M.C., D.F.C. (Feb. 18).

Flg. Off. H A. Smith is transferred from Class B, General Duties Branch, to Class B, Stores Branch (Feb. 18); Plt. Off. J. K. Reid relinquishes his commission on account of ill-health (Mar. 4).

Appointments.

Week ending Mar. 9.

General Duties Branch.—Group Captain F. W. Bowhill, C.M.G., D.S.O., to Aircraft Depot, Egypt, to command, 19/2.

Wing Commander E. Osmond, C.B.E., to H.M.S. *Eagle* pending taking over command of R.A.F. Unit, 19/2.

Squadron Leaders E. J. Hodsoll, to H.Q., India, 27/2. T. F. Hazell, D.S.O., M.C., D.F.C., to No. 60 Sqdn., India, 27/2. T. F. Bullen, O.B.E., to No. 1 F.T.S., Netheravon, 16/3. G. W. Williamson, O.B.E., M.C., to I.A.A.D., Henlow, 23/3. B. P. H. de Roeper, A.F.C., to R.A.F. Depot, 11/3. J. O. Andrews, D.S.O., M.C., to Aeronautical Committee of Guarantee, Germany, 11/3.

Flight Lieutenants R. S. Sugden, A.F.C., to No. 1 School of T.T. (Boys), Halton, 2/3. J. W. Hosking, M.B.E., to I.A.A.D., Henlow, on transfer to Home Estab., 2/3. H. G. Crowe, M.C., to H.Q., Iraq, 27/2. S. P. Simpson, to No. 30 Sqdn., Iraq., 4/2. S. B. Harris, D.F.C., A.F.C., to H.Q., India, 10/2. P. H. Davy, to No. 31 Sqdn., India, 16/2. S. E. Storrar, to No. 4 F.T.S., Egypt, 22/2. W. N. Cumming, to No. 27 Sqdn., India, 4/2.

Flying Officers D. F. Anderson, D.F.C., to Aeroplane and Armament Exper. Estab. (No. 15 Sqdn.), Martlesham Heath, 16/3. D. R. Mitchell, M.B.E., to Armament and Gunnery School, Eastchurch, 16/3. J. Durward, to Air Ministry, 10/3. R. S. Martin, to H.Q., Inland Area, 19/11. F. Jezzard, M.B.E., to I.A.A.D., Henlow, 11/3. W. G. Jones, to No. 58 Sqdn., Worthy Down, 18/3. M. H. Aten, D.F.C., to remain at No. 12 Sqdn., Andover. H. W. Taylor, to R.A.F. Cadet College, Cranwell, 11/3. L. de V. Chisman, to No. 28 Sqdn., India, 27/2. L. A. W. Deane, to No. 1 School of T.T. (Boys), Halton, 10/3. C. C. Bazell, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 17/1. S. McKeever, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 4/2. A. I. Riley, A.F.C., to No. 55 Sqdn., Iraq., 27/2. W. A. Opie, to No. 31 Sqdn., India, 27/2.

Pilot Officers J. A. P. A. Yearsley, to No. 28 Sqdn., India, 27/2. B. F. H. Harding, to Inland Water Transport, Iraq, 27/2. R. E. Coupland, to No. 20 Sqdn., India, 27/2. V. W. Soltau, to Aircraft Depot, India, 27/2.

Medical Branch.—Flight Lieutenants E. A. Lumley, M.C., M.B., to H.Q., Iraq, 19/2. D. McLaren, M.B., to Aircraft Depot, Egypt, 14/2. W. J. G. Walker, to Palestine General Hospital, 14/1. C. T. O'Neill, O.B.E., M.B., to R.A.F. Hospital, Cranwell, 25/3. Flying Officers C. J. McQuillan, M.B., B.A., to H.Q., Iraq, 27/2. C. G. J. Nicholls, M.B., to Electrical and Wireless School, Flowerdown, 2/3.

Stores Branch.—Flight Lieutenant L. H. Vernon, to Engine Repair Depot, Egypt, 13/2. K. A. Smith, to Electrical and Wireless School, Flowerdown, 5/3. Flying Officers E. R. Wood and H. Parker, to Aircraft Depot, India, 27/2.

Accountant Branch.—Flight Lieutenant R. F. C. Metcalfe, to H.Q., Accountant Office, Iraq, 10/12. Pilot Officers G. Goodall and A. McBroom, to School of T.T. (Men), Manston, on appointment to Perm. Comns. on probation, 23/2.

Aircraft Carriers.

The Times of Mar. 6 states:—

The new official Return of Fleets shows three large cruisers to be under conversion to aircraft carriers—the *Furious*, *Courageous*, and *Glorious*.

The first-named was adapted provisionally for carrying duties in 1917, and during the last year of war flew the flag of Rear-Admiral Sir Richard Phillimore, Admiral Commanding Aircraft in the Grand Fleet. Withdrawn from such service in 1919, the *Furious* was paid off into dockyard control at Devonport in June, 1922, to undergo extensive alterations which are only now approaching completion. The *Furious* is due at Portsmouth next week for trials.

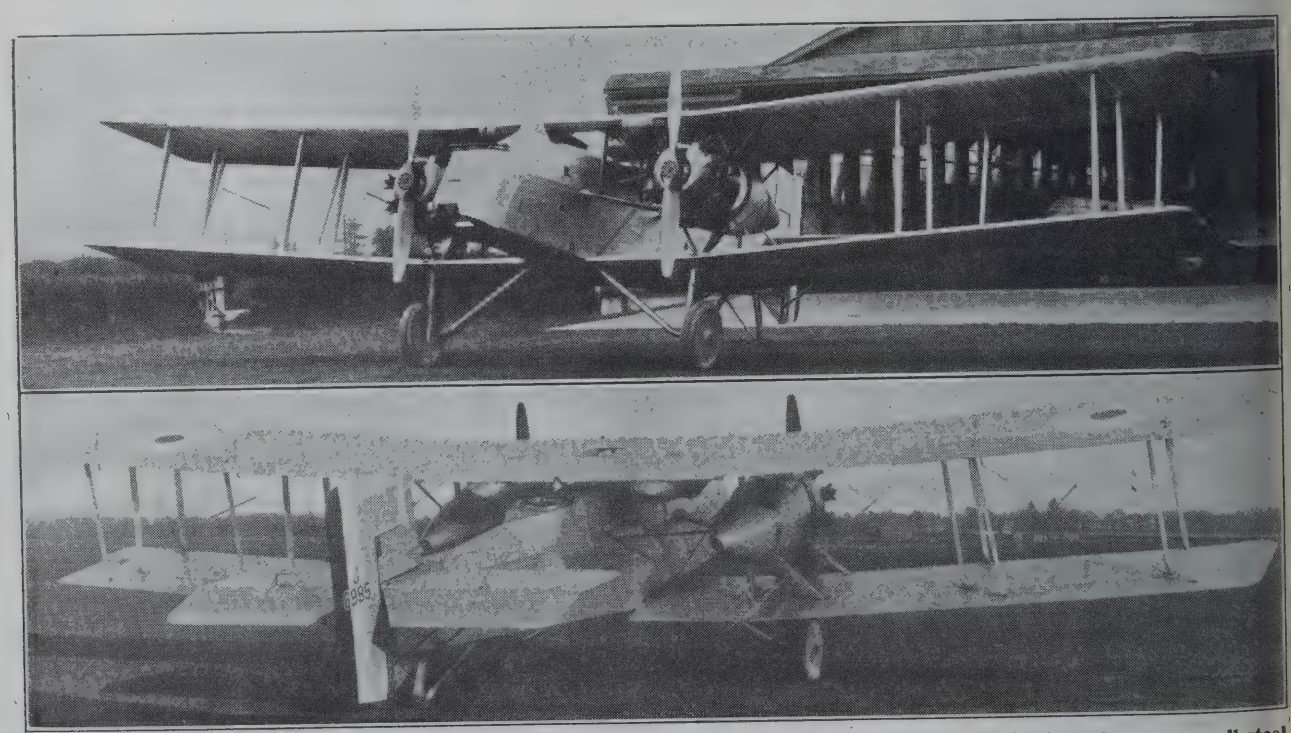
Captain J. L. Pearson, C.M.G., Commander W. T. Makeig-Jones, and other officers of the ship are also borne for duty in connection with the *Courageous* and *Glorious*. These ships were paid off into dockyard control at Devonport and Rosyth respectively last spring, but will not be completed for some considerable time. The date for the *Courageous* to be finished has been fixed provisionally for October, 1927.

The R.A.F. in Iraq.

The Baghdad correspondent of *The Times* in a report of an attack by desert raiders on a motor convoy proceeding from Baghdad to Beirut on Mar. 5 in which Madame Maillard, the wife of the French Vice-Consul at Baghdad, was killed, states that on receipt of the news in Baghdad, the R.A.F. sent out a hospital aeroplane escorted by six bombers, but found no trace of the robbers. Six armoured cars left Baghdad the following day (Mar. 8) to tour the neighbourhood of the Wadi Hauran, to ensure, as far as was humanly possible, that there should be no repetition of the outrage.

The R.A.F. as a Career.

["The Royal Air Force as a Career," Air publication 1100.



NEW EQUIPMENT.—The Boulton and Paul Bugle Mark I (two Bristol Jupiter engines), a high-performance, all-steel twin-engined day-bomber. Except for the wing and fuselage covering the machine is entirely of steel construction.

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The purpose of this book, according to its author, is to sketch briefly the opportunities the Royal Air Force offers to those who would adopt it as a profession. As the Preface explains, the tradition of hereditary careers has had to be modified and a boy may be excused for not wishing to follow in his father's footsteps.

The preface points out than an unmarried officer can live on his pay and should be able to marry on his pay and allowances at the age of 30.

The book goes on to describe the three methods of entry into the R.A.F. Through the Cadet College, through the Universities, and by the grant of a Short Service Commission.

An unmarried University man under 25 who has taken his degree is recommended by the Governing Body of the University and has passed the R.A.F. Selection and Medical Boards is attached to a Flying Unit during the Long Vacation. If at the end of six-weeks' flying experience he receives a favourable report from his C.O. he is granted a commission and gazetted to the rank of Pilot Officer with 12 months' seniority.

The other methods of entry are described in a similarly concise method. There is also a very adequate description of the opportunities and life of an officer of the four other branches of the Service, namely, the Stores, Accountant, Medical, and Chaplains' branches.

The medical branch certainly offers a career for young medical men which from the point of view of investigation of tropical diseases and research into industrial psychotopy, are not to be found in either of the Senior Services. An athletic Chaplain is particularly welcome.

Chapter II deals at length with the R.A.F. Cadet College, Cranwell, and there are 19 full-page pictures of the workshops, Cadets' Mess, playing fields, etc.

Courses, long and short, are described briefly. The opportunities for sports and games of all kinds are legion and 61 days' leave in any one year sounds pretty good.

Service overseas, from Mosul to Somaliland, and from Malta to Lahore, or with the Fleet in almost any seas, ought to tempt exactly the adventurous kind of young man the R.A.F. wants.

Parents who are misguided enough not to want their sons to go into the newest and most elastic of the fighting Services had better keep this little book out of their hands.—C. M. MCA.

The R.A.F. Medical Service.

The president of the Royal Society of Medicine on Mar. 9 presented the North Persian Forces Memorial Medal for 1923 to Wing Cdr. Harold E. Whittingham, R.A.F.M.S., for his paper entitled, "Observations on the life history and bionomics of *phlebotomus papatasii*," written in conjunction with Flt. Lt. A. F. Rook, R.A.F.M.S.

The R.A.F. Memorial Fund.

At a meeting of the Executive Committee on Feb. 18, a sub-committee was appointed to go into the question of the enlargement of the Vanbrugh Castle School. Air Marshal Sir John Salmond who has also accepted re-election as a member of the Executive Committee, is to preside over the sub-committee.

The Secretary reported that a wide distribution of the two new leaflets had been made. These leaflets describe the activities of the Fund and make a special appeal for contributions. The Fund requires a capital sum of £400,000, of which only a little over a third has been raised.

Rugby Football.

R.A.F. v. Oxford University.—The R.A.F. were beaten at Oxford by Oxford on Mar. 4 by three goals and a try to four tries. The *Morning Post's* account of the game states :—

It was rather an astonishing result, for the Air Force played so well all round that ten minutes from the end they held a lead of four points. Oxford, however, then developed a series of smart attacks, and tries by Smith and Macpherson (both converted by Berkley) decided the issue in their favour. Against a side which included six Blues the R.A.F., though beaten in the end, gave a really convincing display. Chick scored an unconverted try after ten minutes, but McCanlis equalised. Then the Service showed smartness in the open, and, after a good cut-through by Chambers, Wale ran over, Scott adding another try before the interval. An opening by Kittermaster allowed Macpherson to run over for the 'Varsity, and, as Berkley converted, the teams were practically level. Then Wale registered a capital try after strong R.A.F. attacks, and the visitors held on to their advantage until the late Oxford rally upset their calculations, as already recorded.

Boxing.

The R.A.F. v. The Civil Service.—The R.A.F. met the Civil Service at Halton on Mar. 4, the results being as follows :—

Bantam-weight: A. J. Nuarry (C.S.) beat Cpl. Alexandra (Halton) on points after a very good fight.

Feather-weight: Flt. Lt. H. E. Walker, M.C., D.F.C., beat A. McGrath (C.S.) on points after a splendid fight. Flt. Lt. G. C. Howard, D.F.C. (Flowerdown) v. J. N. Williams (C.S.). Owing to the hard hitting of Williams the referee stopped the fight in the second round.

Light-weight: C. F. Way (C.S.) beat Flg. Off. L. Whitfield (Cranwell) on points after a very good fight. AA. Woods (Flowerdown) beat T. C. Poyton (C.S.) on points.

Welter-weight: L. H. Newlyn (C.S.) beat Flg. Off. P.B. McGregor (Old Sarum) on points after a very good fight. E. A. Bacon (C.S.) beat AC.2 Cardwell (Flowerdown).

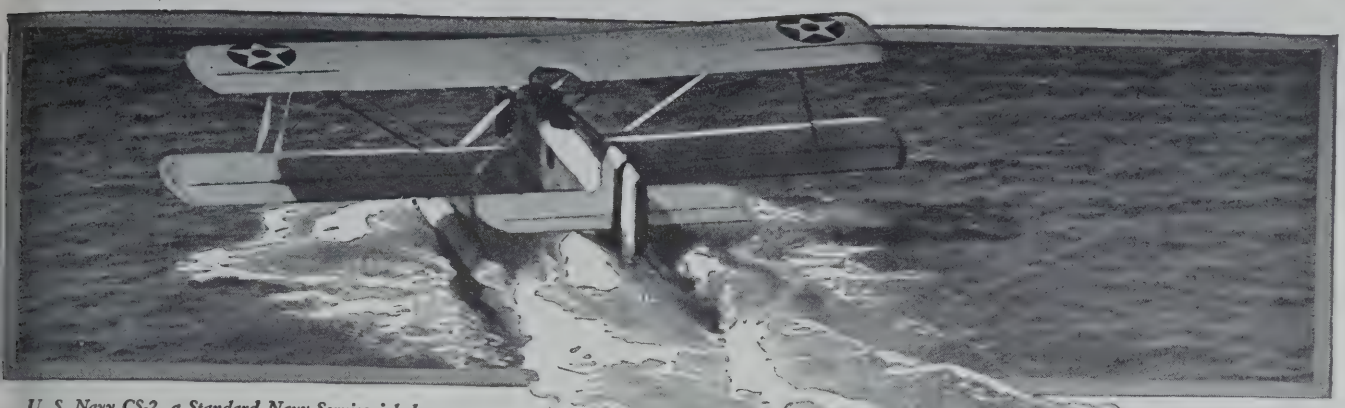
Middle-weight: V. S. Pullin (C.S.) beat Flg. Off. E. G. Whinney (Duxford) on points. This was a very interesting fight. Flt. Lt. Cavis-Brown (Gosport) v. S. V. Bolton (C.S.). This match was scratched owing to indisposition.

Heavy-weight: W. A. Reedy (C.S.) beat Flg. Off. G. A. Scott (Kenley). The fight was stopped in the second round by the referee owing to the hard hitting of Reedy.

Special Six-round Contest: AC.2 Rollason (Halton) beat AC.1 Marshall (Felixstowe). Rollason won on points. This was one of the finest contests ever seen at Halton. Both men fought hard and there were times when they appeared to be almost helpless from the punishment received, only to recover and fight back as hard as ever. It was a clean upstanding bout which set a good example to the hundreds of boys who were present.



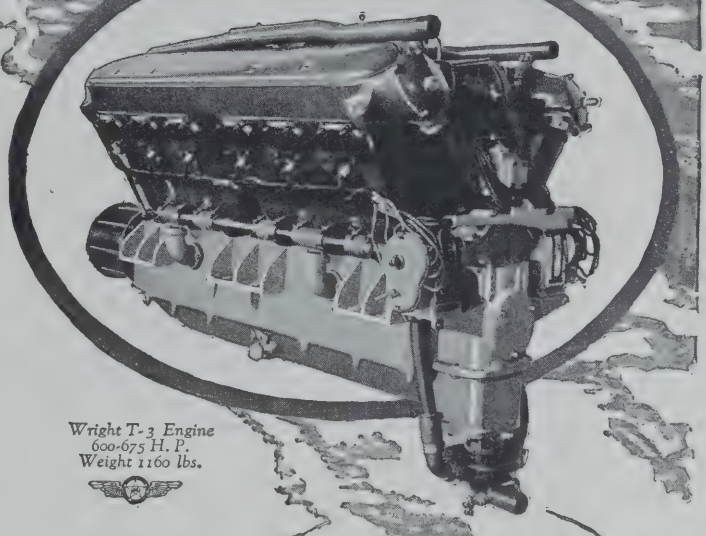
AUSTRALIA'S PRIME MINISTER FLIES.—The above photograph shows a group taken at Winton Aerodrome on Oct. 31 1924, on the occasion of the Australian Prime Minister's flight from Winton to Longreach and back on the Queensland and Northern Territory Air Services. On the outward journey he flew in a D.H.50a, and on the return a D.H.9c, both fitted with 240 h.p. Siddeley Puma engines. From left to right :—Mr. Peterson, Private Secretary; Col. Cameron; Mr. P. H. Moody, Pilot; Mr. Hudson Fysh, Manager of Quantas; Dr. F. A. H. Michod, Chairman of Directors, Quantas; Mrs. Bruce and Mr. S. M. Bruce M.C., the Prime Minister of Australia. In the background a D.H.50a.



U. S. Navy CS-2, a Standard Navy Service job known as a 3-purpose plane (A) long distance scouting, (B) Torpedo plane, (C) bomber

The CS-2 powered with a Wright T-3 engine recently broke five world's records for seaplanes (1) duration in hours, (2) non-stop flight in miles, (3) speed for 500 km. (310.5 mi.), (4) speed for 1000 km. (621.0 mi.), (5) speed for 1500 km. (931.5 mi.). The Navy Flying Boats—PN-7's powered with two Wright "T" engines at the Baltimore Sea Plane Meet, October 25, 1924, established or exceeded thirteen additional F. A. I. world's records.

The Tested, Steady Service of Wright T-3 Engines



Wright T-3 Engine
600-675 H. P.
Weight 1160 lbs.

OVER two years ago the Wright Model "T" Engine passed its experimental tests and is now the only high power aircraft engine in volume production in the United States.

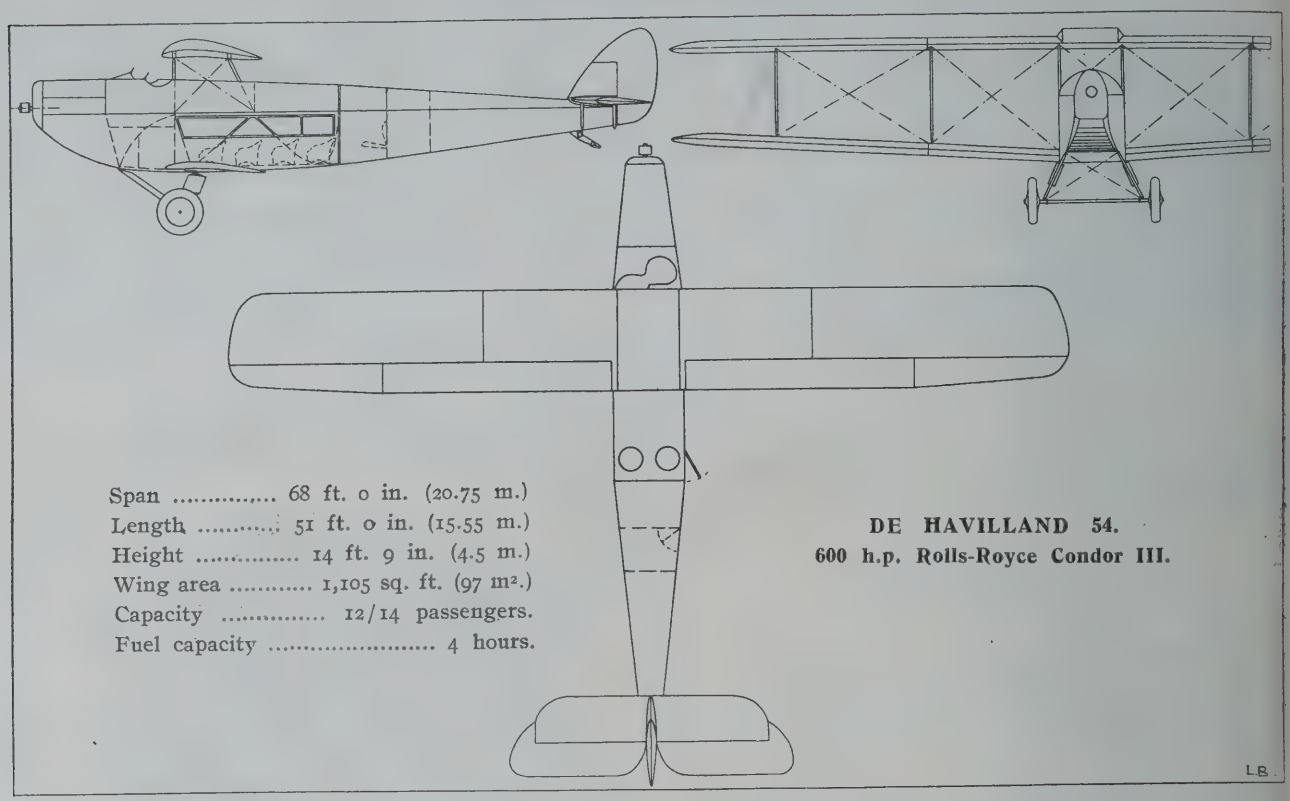
With a record that includes various types of planes and unusual flying conditions, this Engine remains unexcelled for Durability, Low Frontal Resistance, Compactness, coupled with low weight per H. P., making it most useful for not only heavy duty and weight carrying, but for high performance planes as well.



WRIGHT AERONAUTICAL CORPORATION
Paterson, N. J., U. S. A.

WRIGHT MODELS T ENGINES

THE D.H.54.



Span 68 ft. 0 in. (20.75 m.)
Length 51 ft. 0 in. (15.55 m.)
Height 14 ft. 9 in. (4.5 m.)
Wing area 1,105 sq. ft. (97 m².)
Capacity 12/14 passengers.
Fuel capacity 4 hours.

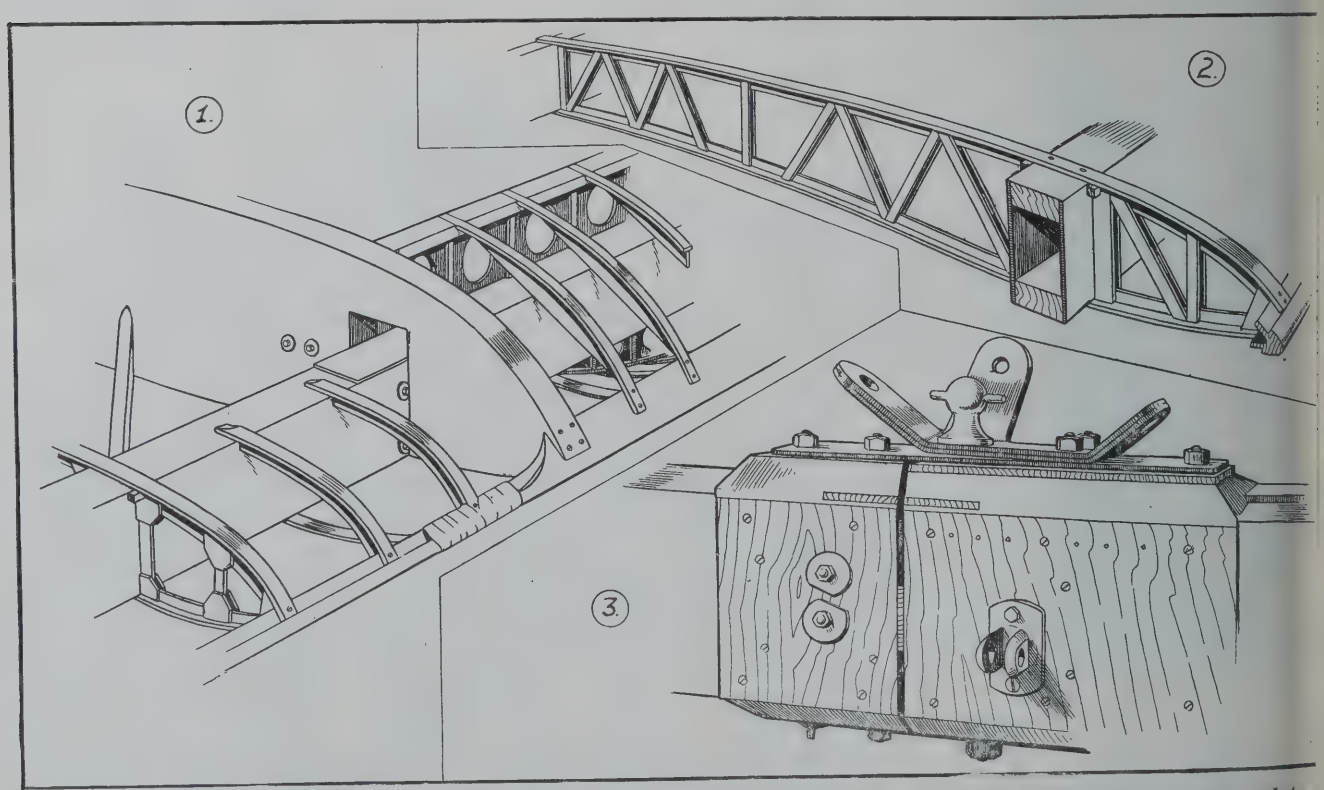
DE HAVILLAND 54.
600 h.p. Rolls-Royce Condor III.

L.B.

The D.H.54, which is now approaching completion at the works of the De Havilland Aircraft Company at Stag Lane, has been built to the order of the Air Ministry for commercial passenger-carrying purposes and will be put to practical trial on the services of Imperial Airways, Ltd., after preliminary tests by the Air Ministry.

This machine is intended to carry 12 passengers with pilot and navigator, together with four hours' fuel, and is equipped with a Rolls-Royce Condor III engine, of lower compression ratio than the Service type Condor. This has the effect of slightly reducing the power available but should add greatly to the life between overhauls and the cost of upkeep.

In general arrangement the D.H.54 follows the earlier D.H.34, with a number of differences. The machine is of considerably larger dimensions than the 34, but as the headroom necessary in the cabin does not increase with the number of passengers carried, the maximum height of the body of the 54 does not greatly exceed that of the 34. The wing chord, the gap, and the length of fuselage, are, however, considerably increased. The fuselage therefore does not fill up the interplane gap in the 54, and is of finer lines than was the case in the 34. Also the passenger accommodation has been increased by widening the cabin, so that three, instead of two, seats are arranged abreast. The re-



DETAILS OF D.H.54 WING CONSTRUCTION.—(1) The step up in wing thickness in the centre section to accommodate the fuel tank. (2) Spar and rib structure. (3) A spar joint w ith strut and wire fittings.

"MOTH"

TWO SEATER LIGHT AEROPLANE.

27-60 H.P. "CIRRUS" ENGINE.

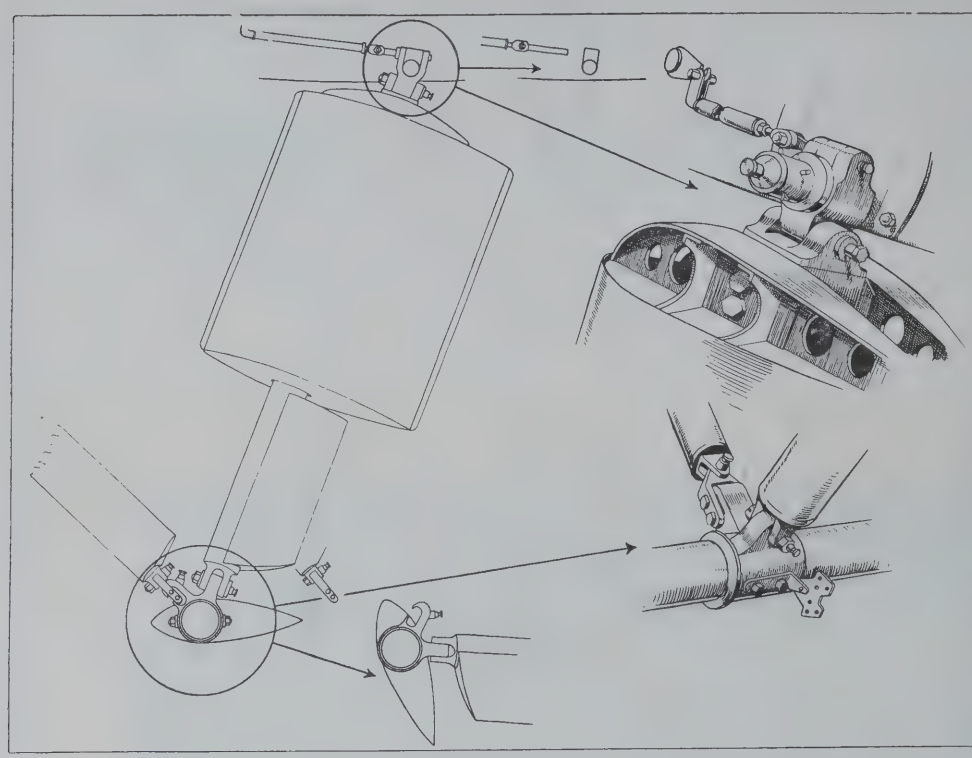


"IT can be said at once that the Moth is the most promising contribution yet made to the difficult problem of getting the youth of the nation into the air."

"The Times," March 3rd, 1925.

THE DE HAVILLAND AIRCRAFT CO., LTD.,
STAG LANE AERODROME,
EDGWARE, MIDDLESEX.

Telegrams: "Havilland, Edgware." *Telephone:* Kingsbury 160 163.



THE D.H.54 UNDERCARRIAGE. The telescopic leg of the undercarriage is attached to a cylindrical stud on the side of the fuselage by a universal joint block. This block is slotted away on the top side so that it will fall clear of the fuselage attachment when the machine is in the air unless a filling block which fits the slot is in position and locked there by a pin passing through both the main and the filling block. (See details in upper circle.)

This pin is coupled by a system of links and a rocking shaft to a lever in the cockpit by which it may be withdrawn. The rear leg then falls from the fuselage and hinges round the hook joint between axle and front undercarriage leg. (See details in lower circle.)

The gap in this hook is too narrow to allow the fixing studs passing through the hook to come out until the rear leg has fallen to a horizontal position, but when it has fallen far enough the hook disengages and the rear leg and axle fall clear.

sult is a body of considerably better shape than that of the 34, which should lead to an appreciable improvement in the performance of the machine Also the length occupied by the cabin is relatively less in the 54, and the variable load is better concentrated, which will tend to make the machine lighter on fore and aft controls and less subject to change of trim with change in load distribution.

The wing loading of the 54 will be appreciably less than that of the original 34, and, in addition, the machine is fitted with the de Havilland automatic flap-gear so that a marked reduction in landing speed will be attained. The actual minimum flying speed will certainly be below 60 m.p.h., probably considerably so.

Another interesting innovation is the arrangement whereby the undercarriage may be dropped in the event of forced alighting on the water. It will be remembered that trials of ditching an early commercial machine made at Felixstowe last summer showed that the possession of a water-tight fuselage did not ensure the flotation of a machine which alighted on the sea because the machine tripped over the wheels and put its nose into the water. In the 54 the telescopic rear legs of the undercarriage can be released from the fuselage by the withdrawal of a pin controlled by a lever in the pilot's seat. This leg, together with the axle and wheels swings round a hook joint which attaches it to the front undercarriage legs, and finally falls clear, when the front legs will swing up under the fuselage on contact with the water. This hooked joint is so arranged that the pins which couple the axle to the front struts cannot possible disengage until the rear leg has swung through a considerable angle. The arrangement is shown in some detail in a sketch. A feature of this undercarriage is the provision of grease-gun lubrication for all the undercarriage working bearings. The underside of the fuselage is covered with heavy three-ply, reinforced with very stout fore and aft stringers and rubbing strakes, so that there should be no risk of the bottom failing on alighting on the water. Also it should be possible to land perfectly safely on shore, if a pilot releases the undercarriage to descend in the water, but eventually finds it possible to reach the shore.

The construction of the 54 follows standard D.H practice for machines of this class. The fuselage is of the three-ply covered type, and the cabin is entirely devoid of internal bracing. The engine is carried by the Condor suspension of ball joints in front and a spring-link system at the rear directly from the main fuselage side members, and the radiator is arranged below the engine much as the 34. The removable engine-mounting arrangement fitted to earlier machines has not been used as it has been found that it is never used in practice.

The seats for pilot and navigator are arranged immediately behind the fireproof bulkhead. The pilot is on the right, and is placed a little forward of, and about a foot above, the navigator. The pilot thus has an excellent view to the right, and quite a good view to the left, as his view in this direction is in no way blanketed by the navigator. The latter has an excellent view to the left, on which side all his route marks should lie, if he is following an established route in accordance with established regulations. There is a large luggage compartment below these two seats.

The passenger cabin is of a very roomy nature, and has ample head room to allow the tallest individual to stand upright. With three seats abreast there will be an ample gangway, and with four rows of seats there is a very generous allowance of leg room. Unsplinterable glass windows are fitted over the whole length of the cabin on each side, the individual panels being arranged so that one panel alongside each row of seats may be slid over another panel so that a maximum of half the window space may be open.

Ventilation and heating can be controlled by the occupants of the cabin. Fresh air is taken in by a ventilator on top of the body at the front of the cabin and is distributed through a large number of apertures in the front wall of the cabin. Air, heated by an exhaust muff on the engine, is also brought into the cabin and arranged to pass along the floor. Both hot and cold air supplies are controlled by a single hand-wheel on the front wall of the cabin—not unlike the heat regulator of a railway carriage—plainly marked Hot and Cold. All that has to be done is to turn the wheel in the required direction.

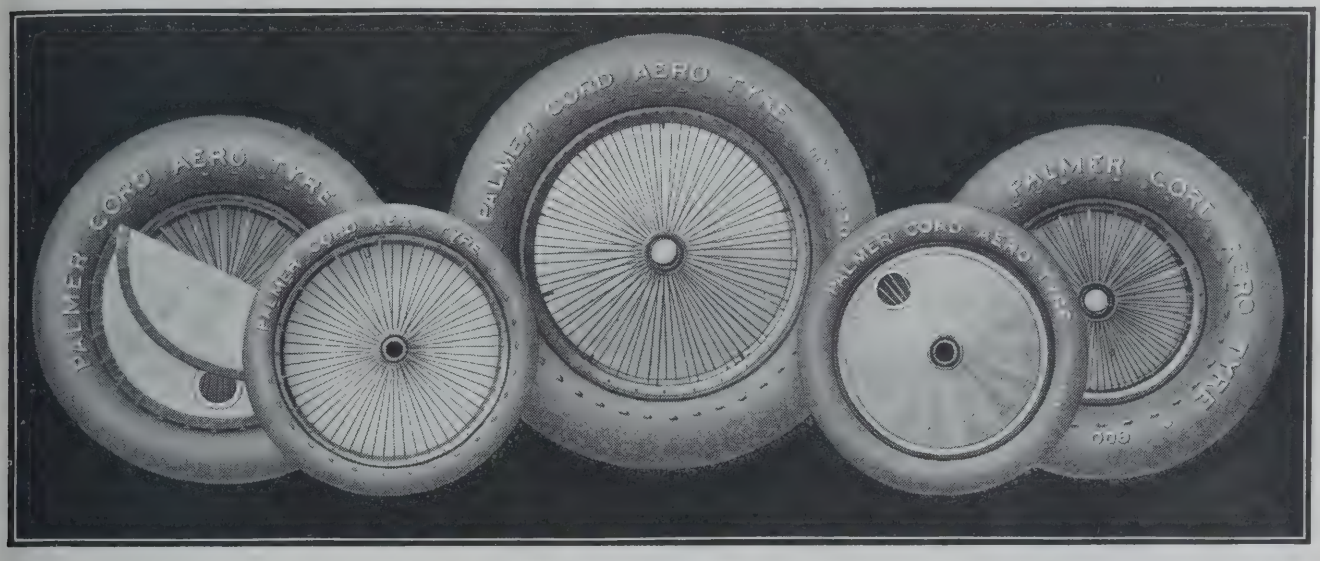
The usual lavatory compartment is arranged at the back of the cabin, and behind that a luggage compartment with a separate entrance.

The wings are of equal span and chord and have no stagger. The top wing is flat and there is a marked dihedral on the bottom wing. Two rows of struts are fitted on each side of the body, with the usual streamline wire bracing. The top wing is in three sections, the centre one running from the inner pair of struts on one side, to the same pair on the other Over the fuselage this section is greatly thickened up and accommodates the petrol tank. Two extensions complete the wing. The lower wing consists of two outer or extension sections and a pair of inner sections which run from the body to the first pair of struts. Trailing-edge flaps are fitted over the whole span of both wings, except for the section of the upper wing occupied by the fuel tank. The outer section of the flap on each wing only is used as an aileron, but the whole length of flap acts as a camber-changing device, controlled by springs, so that the flaps are automatically pulled down at low air speeds. The ailerons are controlled through a D.H. differential gear which is so interconnected with the spring-flap control that the degree of differential action attained alters with the position of the flaps. It has been found in practice that the amount of differential action giving the best result with the flaps up gives an unnecessarily heavy aileron control with the flaps down. By a very ingenious arrangement the flap control is arranged to alter the effect of the differential gear so that the best control at low speeds with flaps down can be secured without sacrificing the results with flaps up.

The wing construction is simple and straightforward. Spars are of the box type, with spruce flanges and ply-wood sides,

PALMER

LANDING WHEELS & TYRES



STANDARD SIZES

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132 46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
†Wheel No. 169 is fitted with Ball Bearings.

THE PALMER TYRE LIMITED

Contractors to the Admiralty, the War Office, and the Air Ministry.

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PARIS 31, Rue la Boétie.

INK (240)

and the ribs are spruce lattice girders. The spar joints are of simple plate type, and the interplane struts bed on ball-ended bolts. All drag bracing is of stranded cable of very generous dimensions, duplicated throughout, as experience has shown that, provided the stresses are kept down sufficently to avoid stretching under working loads, this form of bracing is more reliable than any other type. As drag bracing cannot easily be inspected, a little added weight here is entirely justifiable in the interests of safety.

The tail unit is similar to that of the 34 except for the fitting of balanced elevators.

The De Havilland Aircraft Company are not ready to make any definite statements as to the total weight, or performance of the completed machine, pending tests thereof, but it can confidently be expected that the performance—so far as concerns speed and climb—will be not inferior to that of the D.H.34, and that the minimum flying speed will be greatly reduced—which should not only make for safety in landing but also considerably improve the take-off.

It will be seen that the D.H.54 incorporates no startling novelty of an untried nature, but represents a careful combination of detailed improvements, with a general design which has been tried and found to be satisfactory, and it should therefore prove to be a distinct advance on any previous machine of its class.

The Heinkel H.D.17.

The Heinkel H.D.17 is a two-seater biplane designed for reconnaissance and general military work.

Herr Ernst Heinkel was originally chief designer to the Caspar Werke and before this he was concerned with the designs of the war-time Brandenburg sea-monoplanes, built by the Hanseatische Flugzeugwerke Carl Caspar.

Some time during 1923 Herr Heinkel severed his connection with the Caspar Werke and founded the Ernst Heinkel Flugzeugwerke, at Warnemünde. This firm has an agreement with the Svenska Aero A.B., of Stockholm, whereby all Heinkel designs of military type are built in Sweden free from the interference of the Inter-Allied Control which limits the power and performance of aircraft built in Germany.

The Svenska A.B. have built, under this agreement, several types of aircraft, notably the Svenska S.I and S.II, fitted with the Maybach and Rolls-Royce Eagle IX engines respectively, both of which are in use in the Swedish Naval Air Service.

The most recent type turned out at Stockholm is the H.D.17, which forms the subject of this short note.

The H.D.17 has been designed with the object of extreme simplicity of construction and assembly. The fuselage is built up of welded steel tubes. The top and bottom planes are both built in one piece and are attached to the fuselage by means of quick-release joints. The wings are of the internally-braced type of all-wood construction. The centre-section and I-type interplane struts are of steel tube.

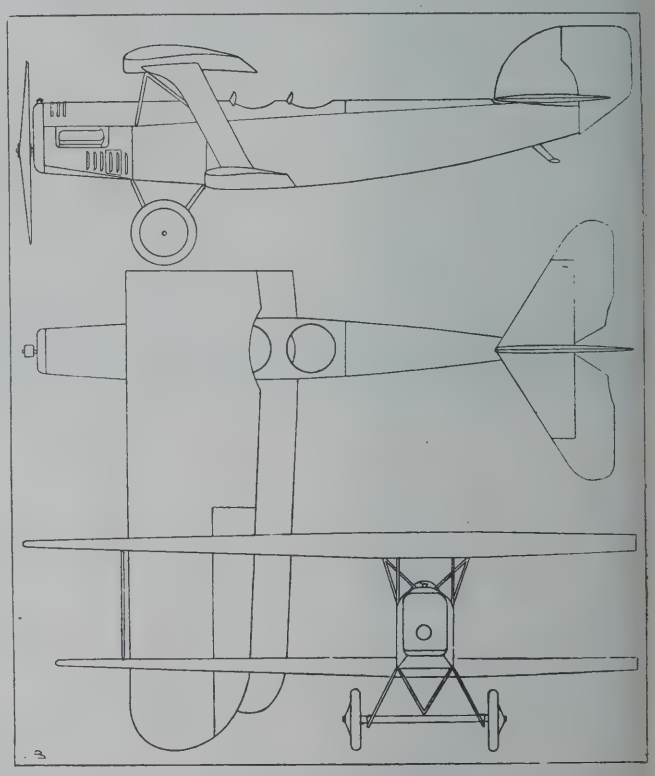
The H.D.17 can be fitted with any engine varying from 360-550 h.p., the welded steel-tube engine-mounting being adapted to receive either the 360 h.p. Rolls-Royce Eagle, the 450 h.p. Napier Lion, the 400 h.p. Liberty, or the 550 h.p. Wright T.3 engines. The tail plane, elevators, fin and rudder are of welded steel tube construction. The ailerons are fitted with slots giving a very high efficiency. The undercarriage is of the Vee-type with rubber shock absorbers. The main fuel tank is mounted between the engine and pilot and is completely isolated by means of two steel fireproof bulkheads fore and aft. The tank can be dropped by means of a quick-release device in case of fire.

Herr Heinkel had recently visited America and during this visit he concluded an arrangement with the Cox-Klemin Aircraft Corporation, of Baldwin, L.I., whereby two aircraft of the H.D.17 type were entered in the recently-concluded Corps Observation Competition organised by the U.S. Army Air Service to discover a machine to replace the D.H.4b.

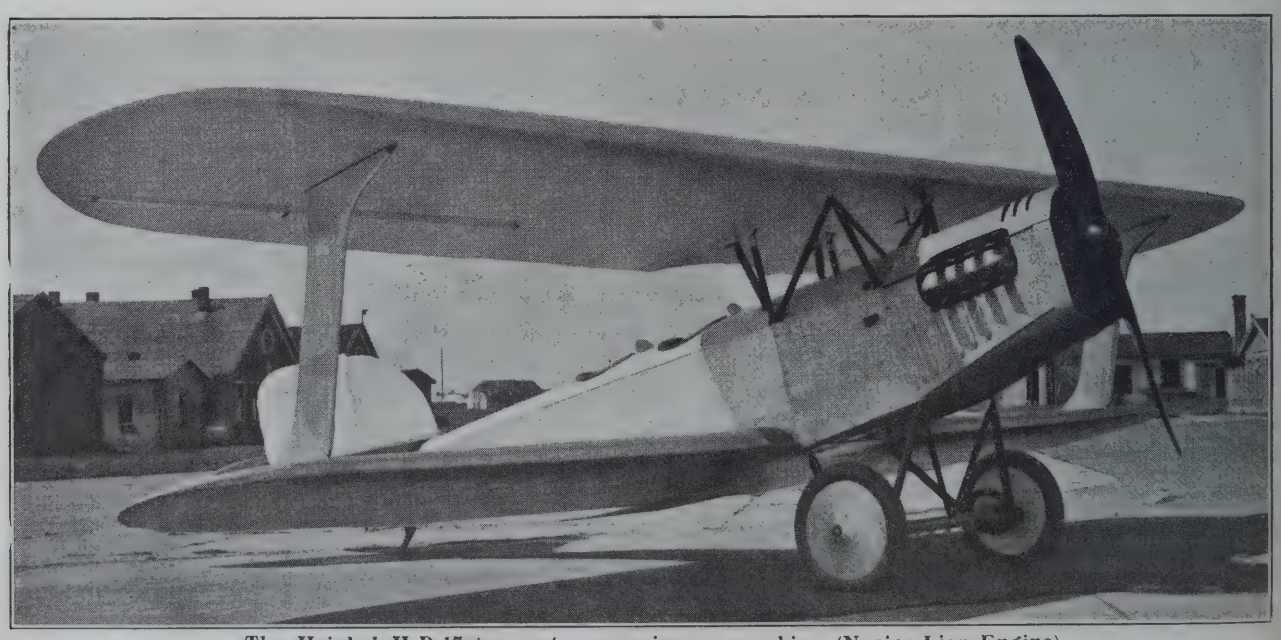
These two machines, known as the C.K.-C.O.1 and the C.K.-C.O.2, were fitted with the Napier Lion and the Liberty engine respectively.

On Jan. 29 these two machines flew from McCook Field to Washington, and during this flight, which was accomplished with a following wind, they covered 250 miles in 90 minutes.

At Washington they were to undergo inspection and flight testing by Air Service officers of the Army and Navy Departments. On test it was found that the Napier-engined machine had a top speed of 152.2 m.p.h. with a ceiling of



G. A. of the Heinkel H.D.17.



The Heinkel H.D.17 two-seat reconnaissance machine (Napier Lion Engine).


ALL-METAL
AEROPLANES
SEAPLANES &
FLYING-BOATS.
SHORT
(ROCHESTER BROS. & BEDFORD) LTD.
WHITEHALL HOUSE,
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25,000 feet and the Liberty-engined machine a top speed of 137 m.p.h. and a ceiling of 21,000 feet.

General Specification.

Span	12.4 m.	Wing loading	54 kg./m².
Length	9.48 m.	Power loading	4.55 kg./h.p.
Surface	38 m².	Speed	240 km.p.h.
Weight empty	1,350 kgs.	Climb	2,000 m. in 8 mins.
Useful load	700 kgs.		4,000 m. in 19.5 mins.
Total weight	2,050 kgs.		6,000 m. in 42 mins.

The Royal Aeronautical Society.

The Annual General Meeting of the Royal Aeronautical Society will be held at 5 p.m., on Tuesday, Mar. 31, at the offices of the Society, 7, Albemarle Street, W.1.

The business will include approval of the Report and Balance Sheet, the filling of vacancies on the Council, and such other business as may be brought forward for discussion by members, after due notice given to the Secretary.

The retiring members of Council, who are all eligible for re-election, are :—L. Bairstow, T. R. Cave Brown Cave, Sir M. D. Chalmers, C. R. Fairey, J. T. C. Moore-Brabazon, Mervyn O'Gorman, J. L. Pritchard, The Master of Sempill, R. V. Southwell, and H. T. Tizard.

The following are the remaining lectures for the current session :—

Thursday, Mar. 19, Captain F. Tymms, on "Practical Navigation of Aircraft," 5.30 p.m. 7, Albemarle Street.

Thursday, Mar. 26, Dr. Eckener, on "Modern Zeppelin Airships," 5.30 p.m. Royal Society of Arts, John Street, Adelphi.

Thursday, Apr. 23, Col. F. Searle, on "The Maintenance of Commercial Aircraft," 5.30 p.m. 7, Albemarle Street.

Thursday, Apr. 30, The Wilbur Wright Memorial Lecture, by Rear-Admiral D. W. Taylor, on "Some Aspects of the Comparison of Model and Full-Scale Tests," 8.30 p.m., at a place as yet undetermined.

(All these lectures should prove of great interest, particularly those by Dr. Eckener and Col. Searle. The Wilbur Wright Lecture is, of course, an occasion which should not be missed by anyone who can avoid doing so.)

Optical Stress Determination.

The paper by Prof. Coker—"Photo-Elastic Methods of Stress Determination"—read before the Institution of Aeronautical Engineers on Friday, Feb. 20, proved to be one of the most interesting yet delivered before that Society.

The basis of the method demonstrated by Prof. Coker is the fact—which has been known in a general way for many years—that if a beam of what is known as polarised light is transmitted through a transparent body and if that body is subjected to a varying stress the interference colours visible when the object is examined in an analyser change with change of stress, and that the colour actually produced is a measure of the stress, at any rate in simple stresses such as tension.

During the past 20 years or so a large amount of research work on the internal distribution of stresses in materials has been carried out by the application of this fact, with results of very great value to the engineer. The technique of this method of mapping internal stresses has been developed to such an extent that it is possible to map the internal stresses in a complicated frame member within quite a short period when an attempt to reach the same result by mathematical analysis would either break down entirely or would be an undertaking of a prohibitively lengthy and laborious nature.

Prof. Coker made no attempt to deal with the theory of the subject, but he showed a number of very beautiful colour photographs of stressed models of various types, together with a number of stress maps deduced from the colour bands shown in the photographs. These showed how extraordinarily non-uniform the distribution of stress may be in many cases well within the limits of practical engineering.

Non-uniform distribution of stress, of course, means inefficient use of the qualities of the material employed, or in other words unnecessary weight for the required strength. The aeroplane designer above all things needs to secure the best possible stress distribution in his structure, and the method promises to be of extreme value for aircraft purposes.

The apparatus required for optical stress measurement in cases where complicated stresses are involved must be fairly expensive, and its use requires a fairly high degree of skill and knowledge. At present therefore the method is not likely to be extensively used as a practical aid to the drawing office. But the photographs shown did indicate that although the interpretation of results to give an accurate measure of stress requires an instrumental equipment of some cost and size, abnormal and unsatisfactory forms of stress distribution could be recognised at a glance. In particular a photograph of a model eyebolt of quite normal form showed a very poor stress distribution and suggested methods of improving the design almost at the first glance.

The apparatus for visual examination of models of small fittings and so forth should not be expensive, and the use of such an apparatus in the drawing office might lead to a very considerable improvement in detail design. The method certainly seems worth investigation for such purposes.

Another Napier Lion Achievement.

At the beginning of the year a Napier Lion engine was successfully submitted to an official type test of 104 hours' duration, at a rating of 470 b.h.p., instead of the hitherto standard figure of 450 h.p.

The test runs made were in accordance with the usual schedule, and consisted of :—(1) Power-curve determination of 13 five-minute runs, at r.p.m. ranging from 1,600 to 2,200 : (2) Three runs on the Heenan and Froude brake at 2,000 r.p.m., all at 9/10 of rated power (423 b.h.p.) except for the final five minutes of each run, which was at full throttle, and 463/466 b.h.p. : (3) Five runs, each of ten hours, on an airscrew at 2,000 r.p.m., and 9/10 rated power (423 b.h.p.) : (4) Two ten-hour runs on the brake, as in (2), except that the last hour of the final run was at 453 b.h.p. at 2,000 r.p.m. : (5) Slow-running test of ten minutes at 470 r.p.m. : (6) High-speed test of one hour at 2,360 r.p.m., and 363 h.p. on the brake : (7) High-power test of one hour at 2,200 r.p.m. and 494 b.h.p. : and (8) A final power-curve run similar to (1).

The total running time was 104 hours 20 mins. The maximum power developed was 500 b.h.p. at 2,000 r.p.m. During the 100 hours of the main test, the fuel consumption averaged .527 pints per b.h.p. hour, and the oil consumption .015 pints per h.p. hour—or less than 28 gallons of fuel and under seven pints of oil per hour at 432 h.p.

The engine was found to be in excellent condition at the end of the run and gave no trouble of any kind during the test. The particular engine was of the Series V, No. 50486, with a compression ratio of 5.8/1. Up to date, Napier engines have completed nearly 750 hours of running on Air Ministry type tests and in every case the results have been entirely satisfactory.

Mr. J. S. Brown.

The Directors of Brown Brothers Ltd. announce the sudden death on Saturday, Feb. 14, of their colleague, Mr. J. S. Brown, who was one of the original Managing Directors of Brown Brothers Limited.

Mr. J. S. Brown retired from active work over five years ago but continued to take an interest in the affairs of the Company as an ordinary Director.

[All those who have had personal dealings with any of the brothers who founded the firm of Brown Brothers Ltd. will regret to hear of the death of Mr. J. S. Brown.

The Brown family deserve much more credit for their services to mechanical transport than has ever been given to them. Long before there were any motor-cars the brothers were universal providers of everything that went to make bicycles. When the motor-car came into being they were the first of the wholesale cycle firms, commonly known as factors, to take up the sale of motor-car accessories. And when in turn the aeroplane became a practical vehicle they undertook the supply of all kinds of aeroplane parts and material.

Whatever they did they did thoroughly well and whatever part or material or accessory anybody might want it was either procurable from stock or else Brown Brothers were prepared to get it at the shortest possible notice.

All the brothers were essentially practical men who knew that honesty is the best policy and that the way to make and keep business was to give their customers the best of everything in the quickest possible time. This policy, as laid down by the late Mr. J. S. Brown and his brothers, has been the guiding spirit of the firm's business. And all of us who have to do with mechanical transport in its various forms will regret the loss of one who in the earliest days did so much to inculcate this spirit into what has now become one of our most important business houses.

One offers to the family of the late Mr. Brown the sincerest sympathy in their loss.—C. G. G.]

All the World's Aircraft, 1925.

In response to inquiries from would-be purchasers, the proprietors of "All the World's Aircraft" regret to state that as the 1924-25 edition is completely out of print, chiefly owing to large purchases by Government Departments of Foreign Powers, no more copies are available. The proprietors hope to have the 1925-26 edition ready for delivery in April, and those who wish to secure copies are advised to order well in advance.

As usual the new edition will be a completely new publication in which hardly any material used in the previous issue will appear.

Blackburn AIRCRAFT



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GEO. THARRATT 1925

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 10; Tuesday, 10; Wednesday, 12; Thursday, 11; Friday, 10; Saturday, 10; Sunday, 6.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 45, passengers 94, freight 6 tons.

AIR UNION:
Paris—London: Machines 12, passengers 28, freight 7 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 11, passengers 14.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

PRIVATE MACHINE:
Mr. Hamilton's Martinsyde and passenger from Switzerland.

Total number of trips by British machines: 46, carrying 95 passengers. Foreign machines: 23, carrying 42 passengers.

Comparative Figures:

For week ending Mar. 8:
Machines, 69; Passengers, 137; Crews, 81; Total personnel, 218.

Corresponding week, 1924:
Machines, 88; Passengers, 123; Crews, 140; Total personnel, 263.

Corresponding week, 1923:
Machines, 61; Passengers, 197; Crews, 116; Total personnel, 313.

Corresponding week, 1922:
Machines, 44; Passengers, 110; Crews 74; Total personnel 184.

Corresponding week, 1921:
Machines, 31; Passengers, 69; Crews, 35; Total personnel, 104.

Croydon Notes.

This week has been extremely fertile in crashes of various minor sorts. On Monday the Vulcan was being used by various pilots for test flights and at the end of the day Mr. Armstrong was flying it. After making a perfectly good landing a fitting of the undercarriage collapsed as the result of bounces received earlier in the day. Very little damage was done.

The same day Mr. Scholte was flying to Rotterdam on the Fokker F.VII and was compelled to land on the shore near Nieuport. After landing, the machine was blown over onto its nose. Practically no damage was done and the machine was taken to Rotterdam later in the week.

The following morning, when Mr. Young was taxying a Fokker F.III round from the shed in a high wind, a sudden gust caught the machine and turned it over onto its back. Mr. Young was slightly scratched, and in this case also the machine was very little damaged. It has been taken over to the Aircraft Disposal Company, Ltd., for repairs.

The same day Mr. Rogers was going to Paris on the W.8b G-EBBI, when he had to land at Lympne owing to weather conditions. After landing a terrific gust of wind caught the machine and turned it up onto its nose. The lower plane and other parts were somewhat severely damaged but Mr. Rogers was unhurt. General regret is expressed at Croydon that Mr. Rogers' subsequent address to the machine was delivered in the comparative privacy of Lympne.

The gale has been responsible for a number of quick trips. On Tuesday Mr. Youell flew the D.H.50 from Amsterdam to London in 2 hours 11 minutes and on Monday of this week Mr. Olley, on the old and ancient Vimy, went from London to Basel in five hours' flying time. Both Mr. Olley and the Vimy are veterans of the service both having been running regularly for about five years.

The Vimy must now be regarded as a sort of Peter Pan among aircraft. It has frequently been threatened with retirement but after an overhaul it always seems ready for more service. It seems a long while ago to those week-ends when, piloted by Messrs. Barnard and Chattaway she used to take up 700 passengers at 5s. per head on Saturdays and Sundays and thereby earned for herself the title of "The Dollar Princess."

By the way, now that "The Dollar Princess" has been revived with such success at Daly's Theatre why not revive it at Croydon, at any rate for week-ends, if not daily? It would be good propaganda.

An amusing incident occurred in connection with the fire alarm at the aerodrome. This alarm consists of a hooter which hoots and an indicator board which shows automatically whereabouts on the aerodrome the fire is. On one day last week, Mr. Stirling, of Imperial Airways, Ltd., sent a man down to the corner of the Bessoneaux to test some Holt flares and shortly afterwards the fire alarm went off and Mr. Stirling saw men armed with extinguishers converging on this spot. Thinking that there had been an accident with the flares, Mr. Stirling shot down to the Bessoneaux, showing a fine turn of speed, only to find that it was a false alarm given for practice and that it was merely a coincidence that the place chosen for the flares test and the site of the false alarm were the same. It was suggested that owing to the magnificent speed shown by Mr. Stirling between the offices and the sheds he should be fitted with floats and entered for the Schneider Cup.

On Thursday Mr. Leslie Hamilton, who has been flying on the Continent on the Martinsyde F.6, which used to belong to Mr. Raynham, arrived at the aerodrome from Paris. One has heard it rumoured that Mr. Hamilton will shortly join Imperial Airways, Ltd., as a pilot.

Among the passengers who travelled by air during the week-end was Miss Helen Wilkinson, M.P., the only woman Socialist in the House. She left Croydon in a Goliath, of the Air Union, on Friday for Paris, and returned on Monday.

The Avro-Airdisco was flying every day last week, piloted by Mr. Perry. Flt. Lt. R. A. de Haga Haig, the well-known pilot who is commanding at Farnborough, also flew the machine on Wednesday. On Saturday, after flying round Croydon and making some remarkable climbs, Mr. Perry took it to Martlesham for type tests, where the Martinsyde-A.D.C. is also on the same errand.—G. D.

Sir Sefton Brancker.

Sir Sefton Brancker, who has been on a voyage of discovery and inspection of the air route from London to Rangoon, in a D.H.50 (Siddeley Puma) piloted by Mr. Alan J. Cobham, left Baghdad on Mar. 4 and flew, via Rayak, Aleppo and Konia, to Constantinople, which was reached on Mar. 5.

On Mar. 7 the party arrived at Belgrade and on Mar. 8 at Vienna. He was due at Prague on Mar. 9, and should be back at Stag Lane either to-day (Wednesday) or to-morrow.

A later report states that Sir Sefton will not return until Monday, which is most inconsiderate of him, as that is the day before THE AEROPLANE goes to press.

Sir Sefton Brancker in Rangoon.

A friend of THE AEROPLANE in Rangoon, in the course of a personal letter, gives an excellent idea of the activities of Air Vice-Marshal Brancker during his brief visit to Burma.

The short sea trip from Calcutta to Rangoon had apparently completed Sir Sefton's recovery from his attack of pneumonia. He arrived at Rangoon on Monday Feb. 2 and was there met by the District Magistrate on behalf of His Excellency the Governor, and by the Chief Secretary, the Chief Commissioner of Police, the Brigade Major on behalf of the G.O.C. troops, and by Mr. Ronald Kemp, of the Air Survey Company, Ltd., who, as has been chronicled in THE AEROPLANE, is responsible for the Irrawaddy Air Survey.

Sir Sefton set to work at once with all his old energy and strightway inspected the aeroplane base at Monkey Point from which the Irrawaddy Survey was operated, and investigated all the work which is now being done in the South. He displayed great interest in this, which by the way includes a survey and reconnaissance of some 14,000 square miles of forest in South Tenasserim, the advanced party now being stationed at Mergui.

He also showed interest in examples of the previous year's work and the mosaic photographs of the Yenangyaung oil-fields and the Rangoon suburbs. He found the latter photographs useful in searching for a suitable site for a land aerodrome. He expressed his approval of the Air Survey Company's base at Monkey Point as a suitable site for a seaplane station for an imperial air route.

On arriving in Rangoon General Brancker stayed with Mr. Ronald Kemp, who will be remembered by the old hands in aviation as quite one of the pioneer pilots of this country, his pilot's certificate being number 80. Thereafter on the return of the Governor, Sir Harcourt Butler, from a tour, Sir Sefton stayed at Government House.

He inspected the six possible sites for an aerodrome and airship station, and the more promising of these will now be surveyed and estimates made for the cost of their acquisition and completion.

On Feb. 3, 4 and 5 he delivered addresses to the three Chambers of Commerce, namely the European, Burmese and Chinese, and also addressed other local bodies on the subject of air transport to the East and on the Calcutta and Rangoon air route in particular.

On the afternoon of Friday, Feb. 6, Mr. Alan Cobham arrived from Calcutta via Akyab on the D.H.50 with the Siddeley Puma engine, and landed on the racecourse.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

On the Saturday, Feb. 7, they both attended the races as guests of the steward of the Turf Club, after which they went sailing on the lake.

On the Sunday Mr. Cobham flew the D.H.50 to the new racecourse which is now under construction, and there the tanks were filled and the machine was loaded. At 10.10 a.m. they left for Akyab, His Excellency the Governor and his Staff being present to wish them farewell.

Altogether it was quite a busy week for an official who had just recovered from a serious illness.

Brussels-Belgian Congo.

On Mar. 1, Lieut. Thieffry, MM. Roger and de Bruycker, who are attempting to fly from Brussels to Kinshasa in the Belgian Congo, on a Handley Page W.8F. (one Rolls-Royce Eagle and two Siddeley Puma engines) left Niamey at 06.50 hours and at 13.15 hours they were forced to land at Tessowa owing to the intense heat.

At 08.00 hours the following morning they got away from Tessowa and landed at Zinder at 09.00 hours. The heat is terrific and great care is being exercised to safeguard the crew from heat-stroke and the machine from the effects of the tropical sun.

Wembley Exhibition, 1925.

The Secretary of the Royal Aeronautical Society states that there is a proposal by the Government to form at Wembley this year a historical exhibit dealing with flying from the earliest times to the present day.

Any Member of the Society having any books, prints, *objêts d'art*, models, curios, etc., which he would be prepared to lend for this purpose is invited to communicate with the Society's Honorary Librarian :—J. E. Hodgson, Esq., 115, Chancery Lane, London, W.C.2.

All objects loaned will be fully insured and the source acknowledged.

Lectures.

The next fortnightly meeting of the Royal Aeronautical Society will take place in the Library at 7, Albemarle Street, W.1, at 5.30 p.m. on Thursday, the 19th, when Capt. F. Tymms, M.C., will read a paper on the Practical Navigation of Aircraft.

On the following Thursday, Mar. 26, Dr. Eckener will read a paper on Modern Zeppelin Airships at 7 p.m. at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2.

The Cambridge University Aeronautical Society.

On Wednesday, Mar. 4, Mr. Alan Chorlton, of Beardmores, addressed the Society on the subject of all-metal aircraft, and gave his audience furiously to think by predicting that wing loadings of 30 lbs. per sq. ft. would soon be commonplace in sea-going machines. Mr. Chorlton had only arrived in England from America on the Saturday preceding the lecture and drove to Cambridge and then back to London on the same night in order to deliver his lecture on the appointed date.

Details of the construction of the Rohrbach seaplane, which he showed, made a great impression owing to their kinship with shipyard practice, and his defence of heavy loadings used on multi-engined machines capable of carrying an engine in reserve showed a point of view novel to the audience.

Non-Diving Aeroplanes.

A designer of some experience writes :—

I have read with interest your correspondent's letter under the heading "An Airline View." Although with skilful use of words quite awkward technical problems can be discussed on a colloquial basis this gentleman's efforts to put forward an explanation of "controlled stalling" in the 9th and 10th paragraphs of his letter have got him into such a complicated muddle that it is inconceivable that he does not follow what an ass he is making of himself.

Dealing with his explanation of a "straight stall," the reduction in speed simply results in a steady increase in angle of attack, which it is well known results in an increase of lift up to a certain stage when the lift begins to fall off again and the machine is what we call "stalled." This effect is hastened by the fact that the machine is decelerating. It also produces a couple due to the forward position of the centre of pressure which is counter-balanced by the lift on the tail.

Should the tail, which is also going through the same process, speaking colloquially, "stall" first, this couple is removed or lessened, the angle of attack on the main plane increases suddenly, the stability of the whole collapses and the machine is now definitely stalled and must go through its various manœuvres, probably the dropping of one wing in a sideslip, before it can regain flying speed.

From the moment the lift ceases to balance the weight direct horizontal motion is impossible and the flight path inclines downwards. To describe "lift" as "parachute effect" is really too absurd. By when does lift of a plane cease to be L or Ky and become "parachute effect"?

He then goes on to say that this position—the descending forward flight—"is maintained by the pilot by a conscious adjustment of the controls on all machines." This is the essential weakness of his entire argument. Much as the pilot would like to (consciously or unconsciously) he is unable to do so on many machines, for the good reason that sufficient control is not provided to overcome the couples set up by the main plane at this speed, i.e., he has not sufficient tail-plane surface, fin and rudder, or aileron control to correct any accidental and incidental motion in any plane.

Because lift varies as the square then obviously the control effect is varying in a similar proportion and nearly every older type machine lost its controls long before it stalled. That is why many pilots

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preferred to land a machine much faster than its normal stalling speed.

The object in the design of machines which do give such control is so to enlarge the control surfaces that they will function at speeds at which the machine could not normally fly. The ailerons extend the full length of the main planes, the fin effect is enormous and the tail and elevators will be found out of all proportion to ordinary types. Therefore, the pilot is able to "maintain consciously" the position when a stall starts and does in fact land the machines in this manner on board ship.

The same applies to stalling on a turn—it is a question of degree. The depth of dive, the amount of room taken to recover, is a function of the intensity of the stall, and if the initial move can be corrected then the normal attitude will be more quickly regained.

In one well-known Service machine the tail control is lost 7 or 8 miles an hour above stalling speed so that after speed is lost, whether on a turn or otherwise, the collapse of the tail control couple enormously accentuates the stall, with a much greater loss in forward speed and consequently greater depth of fall to recover it.

By Error.

Mr. C. F. Wolley Dod, whose letter was published in THE AEROPLANE last week, writes stating that in the first place his letter does not purport to represent an air line view nor that of any person or persons but himself; secondly that he is not the President of the Federation of Civilian Air Pilots; and thirdly that his name is as now stated and not Wooley.

As Mr. Dod is an air line pilot presumably his view is "an air line view" just as any engine-driver's view would be "a railway view." Secondly one regrets having inadvertently made him President of the Pilots' Federation. And thirdly one cannot accept responsibility for Mr. Dod's caligraphy.

The Aero Golfing Society.

The Winter Meeting was held at Addington, on Mar. 5, with the following results:—

Winter Challenge Cup: Maj. R. H. Mayo, 85 less 9 = 76, and Lt. Cmdr. H. E. Perrin, 90 less 14 = 76—a tie; Cmdr. W. Briggs, 82 less 5 = 77; Lt.-Col. W. A. Bristow, 91 less 14 = 77; Sq. Ldr. C. H. Hayward, 77 plus 1 = 78; Sir Henry White Smith, 95 less 14 = 81; R. A. Reid, Scratch, 83.

Four-ball Bogey Foursomes: R. Reid (Scratch), Lt. Cmdr. H. E. Perrin (14), 6 up; Capt. W. Aston (3), E. J. B. How (4), 6 up.

The Gloucestershire Aircraft and Engineering Society.

The Second Meeting of the Society was held at Sunningend Works on Mar. 4, in the Canteen Staff-room, and was very largely attended.

The Lecturer was Colonel The Master of Sempill, A.F.C., A.F.R.Ae.S., well-known in Aviation circles, and he took as his subject "Aviation in Japan," which dealt with the successful work of the British Aviation Mission to Japan in 1921 under his Command. The Lecture was illustrated with many interesting slides.

As a large part of the flying equipment was provided by the Gloucestershire Aircraft Co. it was of great interest to all members present to hear of the work of those machines which took such an important part in upholding British prestige in the Far East.

Mr. David Longden, of the Gloucestershire Aircraft Co., presided, and at the end of the Meeting moved a vote of thanks to the Lecturer for his most interesting address. Capt. Charley, the foreign representative of the Gloucestershire Aircraft Company, seconded this vote of thanks.

New Company.

AERONAUTICS, LTD.—Private Company Registered Mar. 2. Capital £5,000 in £1 shares. To carry on the business of newspaper proprietors, newspaper and general printers and publishers, advertisers and advertising agents and contractors, etc. The provisional directors are:—G. A. Harben, 40 Wood Street, Westminster, S.W.1, engineer. S. E. Hughes, 5, Duckett Road, Harringay, N., clerk.

Qualification: £1. Secretary (pro tem.): G. A. Harben.

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Mortgages and Charges.

CENTRAL AIRCRAFT CO. LTD.—Equitable mortgage on Palmerston Works, 179, High Road, Kilburn, N.W., dated Feb. 21, 1925, to secure all moneys due or to become due from the Company to the Midland Bank, Ltd.

E. R. CALTHROP'S AERIAL PATENTS, LTD.—Third debenture on all parachutes, accessories and materials and the Company's undertaking and property, present and future, including uncalled capital, dated Feb. 25, 1925, to secure £1,500.

Holder: H. L. Nathan, 1, Finsbury Square, E.C.2.

PERSONAL NOTICES.

DEATH.

PRICE.—On Mar. 4, at the Central Royal Air Force Hospital, Flt. Lt. I. D. Price.

Flt. Lt. Price was promoted to that rank on Jan. 1, 1924, shortly after posting to the Boys' Wing, Cranwell. In February, 1921, he went to No. 47 Sqdn., Middle East, from No. 4 Sqdn., Farnborough, and in February, 1922, he was posted to No. 4 F.T.S., Abu Sueir.

FORTHCOMING MARRIAGE.

THRES—GAMBLE.—The engagement is announced between Flg. Off. L. W. Thres, D.F.C., R.A.F., Cranwell, and Barbara Mary, younger daughter of Mr. and Mrs. Arnold Gamble, of Garriston Manor, Retford, Notts.

MARRIAGES.

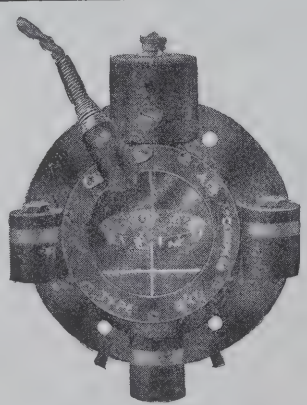
BURTON—WINTER.—On Mar. 2, at St. Mark's, Torquay, Major Robert Clerke Burton, late Central India Horse and R.A.F., to Florence Maud Mary, only daughter of Major and Mrs. Sewallis Winter.

TOWLER—CRAMPTON.—On Mar. 5, at Holy Trinity Church, Chelsea, Flg. Off. Christopher O. Towler, D.S.M., R.A.F., only son of the late Matthew Towler, to Violet L. Crampton, only daughter of the late George Crampton and Mrs. Percival Fowler.

BIRTHS.

MACK.—On Mar. 7, to Eva (*née* Money), wife of Capt. R. G. Mack (late R.A.F.), at Broomfield, Epping Green—a daughter.

PARK.—On Mar. 7, at the Anglo-American Hospital, Cairo, to the wife of Sq. Ldr. Keith R. Park, M.C., D.F.C.—a son.



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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Gordon Glover

APR 2 1925

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THE R.A.F. *V.* THE ARMY AT WEMBLEY.



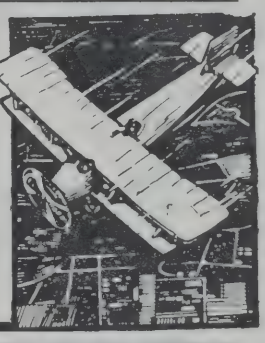


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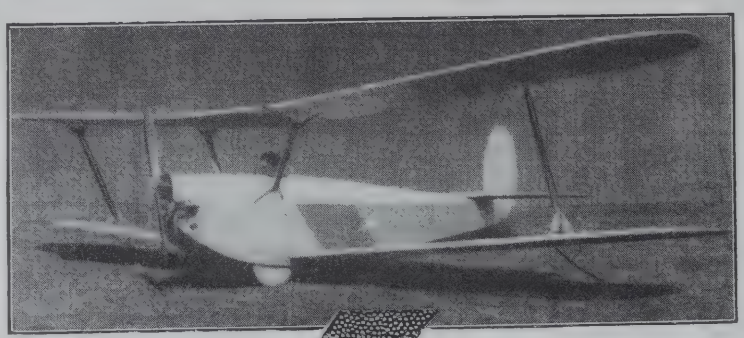
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VOL. XXVIII. No. 11.

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ON THE ORIENTAL AIR JOURNEY.

[*Sir Sefton Brancker, Mr. Alan Cobham and Mr. Elliott in a D.H.50 (Siddeley Puma engine) left Paris at 10.32 hours on Mar. 17 and arrived at Croydon at 13.46 hours, thus completing the journey from London to Rangoon and back.*]

All concerned with aeronautics will congratulate Air Vice-Marshal Sir Sefton Brancker, our Director of Civil Aviation, his pilot Mr. Alan J. Cobham and his engineer Mr. A. B. Elliott, on their happy issue out of all the afflictions, singularly few though they were, which beset them on their journey to the East and back. No less congratulations are due to the makers of the de Havilland 50 and the Siddeley Puma engine with which the flight of 17,000 miles was made.

As is well known, the journey was organised with the idea of investigating the best possible air route to India. For that reason the course chosen was across Germany to Vienna, and thence by way of Constantinople to Baghdad. Those who have followed the various discussions in this paper may recall that one has always advocated this as being the best route to India, in opposition to those who have continually held up Egypt as being the "Clapham Junction of the Air."

The one fact which emerges clearly from the trip is that, as Colonel Paul Henderson, the organiser of the American trans-Continental Air Mail, always says, "an air line is on the ground and not in the air." All the delays which did occur in Sir Sefton's tour would be avoided on a properly-organised air line. His longest delay on the outward journey was caused by a cracked cylinder-jacket, which involved waiting at Constantinople for a new cylinder block to be sent out from England. It so happened that the time was well spent in that Sir Sefton was able to visit the Turkish Government at Angora and enter into amicable relations with our old friends the Turks. But if he had been in a hurry to reach India the delay would have been serious. On an organised air line such an incident would cause little or no delay.

Similarly on the return journey the party were obliged to land in Germany owing to a snowstorm and the machine had to be transported 50 miles by road (if the newspaper account be correct) before a satisfactory aerodrome could be reached from which they could start again. Proper ground organisation on an air line would have given warning of the snowstorm which caused the landing and the machine would have been put down in a proper landing ground, whence it would have been able to start a few hours later.

One fact which should be remembered is that the distance from England to India is only a matter of 7,000 miles and that therefore the journey is equivalent to flying from New York to San Francisco and back, which is the regular daily journey of the U.S. Air Mails, seeing that machines start from New York and San Francisco practically simultaneously every day. As the journey takes 30 hours it will be seen that it is possible with proper organisation to carry mails from England to India in 60 or 70 hours.

However, we shall have Sir Sefton's own views on these and cognate subjects next Monday when he and his companions will be entertained at a banquet by the Royal Aero Club and the Society of British Aircraft Constructors. Meantime one need only point out that Sir Sefton has done a very great service to British Aviation by giving definite proof of the practicability of the England-India air line. And he deserves particular congratulations on having, as Director of Civil Aviation, put himself in a position where he can speak with first-hand knowledge on the problems involved in making a success of such an air line. Whoever may be disposed to argue with him on the subject must be at a disadvantage.

Mr. Alan Cobham holds such a high reputation as a trans-Continental pilot there there is no need to congratulate him on having accomplished a task which in effect has been no more difficult than the many other great flights which he has made in Europe and Africa.

That on which he does deserve very sincere congratulations is the excellence of the information which he has sent home from time to time. His brief descriptions in *The Daily Mail* have been absolutely free from sensationalism of any kind.

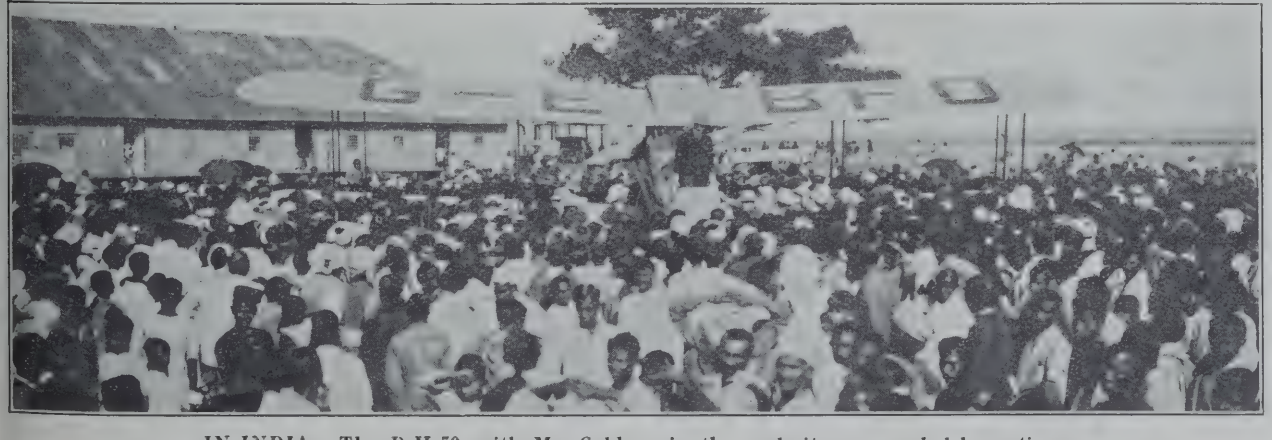
It has been said by others closely concerned with aviation that Alan Cobham is the ideal commercial pilot in that whatever he does is done purely from the point of view of whether it is a commercial proposition or not. Those who have read the very pleasant letters which he has sent to THE AEROPLANE must have been struck by his dictum that anything which partakes of the nature of a stunt is not commercial aviation. That is a point of view which should be adopted by everybody who hopes some day to see Civil Aviation a commercial proposition.

Mr. Elliott the engineer of the party has done excellent work in keeping the machine and engine in first-class flying trim. It may be argued that with such material his task was reduced to a minimum, but that does not in the least detract from the praise which is due to him for the entire freedom from any mechanical trouble which blessed the journey.

As a matter of historical interest one may note that the particular D.H.50 on which the journey was made was built in July, 1923, and first flown in August of that year. Thereafter it was flown intensively on the De Havilland Hire Service and by Imperial Airways Ltd. Up to the end of October 1924, it had covered over 50,000 miles, which is equivalent to twice round the World, so that the journey to India and back was merely a further incident in its career. At the end of October, 1924, it was taken off the regular service and was equipped for the Indian flight chiefly by the addition of extra tanks increasing its range up to 8½ flying hours.

The Siddeley Puma engine was taken from the Aircraft Disposal Company's stock and barring the replaced cylinder block nothing else had been replaced. It was given one overhaul before the return journey and a daily inspection.

Altogether everybody concerned with the journey deserves that glow of righteous pride which comes only to those who have attempted something and done it very well.—C. G. G.



IN INDIA.—The D.H.50, with Mr. Cobham in the cockpit, surrounded by natives.

THE SECOND AIR DEBATE.

The Report Stage of the Air Estimates was taken on Thursday, Mar. 12, when the sections of the Estimates dealing with the numbers of the R.A.F., Pay, Land and Buildings, Quartering and Supplies, and Technical and Warlike Stores, were discussed. Editorial comments appear, as is customary, between square brackets.

The Debate was opened by Major Sir Archibald Sinclair, who was at one time interested in an experimental aeroplane of quaint design which was built at Shoreham. He began by holding up the bogey of the destruction of London and other great cities by fleets of aeroplanes and the demoralising effect on our people and said that although the Navy might still hold command of the Seas it would be incapable of firing a shot in our defence.

He referred to the experiments in the United States when the *U.S.S. Washington* was sunk by aircraft bombs. He said that in the event of an air invasion of this country our fleets at sea would find themselves paralysed because of the destruction of their docks and stores and bases.

It was one of the duties of the Government to make it clear that the Air Force was even now our First Line of Defence. The development of the Air Force should not be cramped by the conservative prejudices of the chiefs of the other two Services, and expenditure should not be entrusted to officers whose view of the Air Force was merely that it should be ancillary to the older Services.

No naval officer who did an air course as he would a gunnery or submarine course was going to accept the Air Force point of view. He was only interested in what the Air Force could do for the Fleet. If admirals had anything to do with promotion they would naturally prefer the man who was interested in their Service rather than the man who was determined to destroy the huge and costly but obsolescent battleships which it was their pride to command. For this reason he and others were alarmed at allowing the Admiralty to be responsible for the expenditure on the Fleet Air Arm. The First Lord of the Admiralty did not even attend the Air Debates.

He asked whether, firstly the recommendations of the Sub-Committee of the Committee of Imperial Defence on relations between the Air Service and the Admiralty had been carried out in full; whether the relations between the Navy and the Air Force had been altered in any respect; whether the Admiralty accepted the principle of the absolute control of the Air Force by the Air Ministry; and whether the Air Ministry were free to develop the Fleet Air Arm without hindrance or interference from naval authorities in such directions for example as in the attack on ships at sea by aeroplanes?

[Here Sir Archibald has touched on a subject which deserves to be brought into the full light of day. The Admiralty has never yet allowed the Air Ministry to discover what it can do against battleships. Various obsolete ships have been sunk by the Navy by gun fire but never yet has the Air Force been allowed to find out by practical experiment what can be done with aircraft bombs. The one thing of which the Navy is afraid is that the Air Force shall be able to show that it can sink battleships, and for that reason so long as the Admiralty can possibly prevent it the Air Force will never be allowed to try to sink a battleship. In this way alone the Admiralty are preventing the development of the Fleet Air Arm, apart from the other directions in which they interfere with and hinder development.]

Continuing Sir Archibald pointed out [which nobody has done before] that a very large part of the French Air Force is tied up with the French Army and that to a very large extent the machines that are scouts, artillery and reconnaissance machines would be no use as part of an independent striking force. Therefore the usual comparison between the French and British Air Forces by the total number of machines was futile.

He asked whether the Secretary of State for Air had ever had an answer to the question which he asked the Committee of Imperial Defence two years ago as to what Imperial responsibility the Air Force had to undertake and what was the standard at which we were to aim in comparison with other Powers.

He asked also whether research was proceeding in methods of defence from the ground. He had not much faith in these methods but he would gladly be converted. Should we rely on defence against air attack or on the offensive power of our striking force by bombing the enemy's air bases? The facts should be stated clearly and the issues clearly faced.

He also asked the Under-Secretary for Air to let us know how we stood in respect to reserves—not reserve units but reserves of personnel to supply wastage of personnel in war.

He advocated expenditure on research and incidentally remarked that in 1919 and 1920 the Treasury was constantly contributing to helicopter experiments at Farnborough. Two years ago the Treasury had given final instalments of grants for these experiments and since then at regular intervals further final instalments had been handed out to the inventor of the helicopter at Farnborough. He wanted to know whether any result was in prospect. [The reference here of course is to the helicopter designed by Mr. Brennan of torpedo and monorail notoriety. Many people are anxious to know how much money has been expended on this.]

Turning to Civil Aviation Sir Archibald said that ultimately it was the foundation on which our air power must be based just as the Mercantile Marine and the fishermen are the foundation of our sea power. Did the Secretary of State still believe that the Imperial Airways Company gave British Civil Aviation a chance of taking the lead in Europe?

He wanted to know whether any help and encouragement was given to the enterprising ex-R.A.F. officers who were going round giving people trips in their own aeroplanes. He acknowledged that long distance lines were more economical and more important but he suggested that air lines connecting up pleasure resorts on the coast and the Highlands of Scotland and so on would interest a large number of people. We were spending £137,000 per annum on air line subsidies while Germany was spending £244,000 and France £652,000.

He wanted to know how negotiations with Germany stood so that we could get our air line through to Prague. It was high time that the whole area of Central Europe should be open to British air lines. He asked whether anything was being done towards carrying mails by air to India.

Finally Sir Archibald said that there seemed to be three principal tasks in front of the Air Ministry. The first was to build up a Service which should not be numerically stronger than the total aeroplane strength of any other foreign power but must be not less powerful than the striking force of the strongest Air Power in Europe. The second was to seek an agreement on disarmament. The third was to promote by all possible means the growth and development of Civil Aviation.

[Altogether this was a very good speech. Sir Archibald is still a young man and not so many years ago he was rather inclined to be of the type which is colloquially called "a lad of the village." He has evidently matured very considerably during the past few years and his speech shows him to be of a mental calibre considerably above that of many men who have held junior Cabinet rank at a greater age. One hopes that he will devote considerably more time in future to air affairs.]

Rear-Admiral Sueter, to whom belongs the credit for having built up the Royal Naval Air Service from its very beginning, said that he was one of the few Members who thought that these Estimates were inadequate. The Secretary of State should dig his heels in and demand all the money that is available for the defence forces. He ought to get at least one-third of the money available.

He said that the number of men voted was inadequate for a first-class Air Force. The Member for one of the divisions at Manchester had criticised the number of flying men as compared with the number of non-flying men. Admiral Sueter said that if you had one thousand men looking after one machine and that machine brought in the right information at the right time they would not be wasted. If Lord Jellicoe had had proper air reconnaissance at the Battle of Jutland it would not have mattered if there had been a thousand men looking after the machine. That might well be left to the Air Minister. He was not likely to overload the Air Force.

The promotion of the younger men should be studied. The people at the head of the list were blocking promotion and should be put on a reserve list to help the younger ones.

He wanted to know how much money was to go to the Fleet Air Arm, whether any old type machines were being produced and whether machines were being reconditioned. He said it was time all old machines were wiped off the list. Were boat seaplanes and torpedo aeroplanes being properly developed?

Turning to the Royal Aircraft Establishment at Farnborough Admiral Sueter said that it had cost £2,000,000 in five years and wanted to know what it had produced. He recalled that the Naval Air Service would not have anything to do with Farnborough and got better results by going to private firms.

He reminded the House that we held no World records and no trophies in this country, either because our Aircraft Industry was too inefficient or too much hampered. It was not inefficient, for in the War we produced the best machines in the World. Therefore it must be hampered. We were overloading our machines with too many gewgaws [he probably said gilguys, which is the proper Navy term for anything which is smaller than a gadget—and patentable] and they were not efficient. He suggested that the Aeronautical Inspection Department also tied firms' hands too much. The R.N.A.S. inspectors in the old days could do as they liked.

On the subject of accidents he said the R.N.A.S. used to have very few accidents because they drew skilled artificers from the Navy. He suggested that the Air Force should have a pure engineering branch—men who had a much higher training and were not hauled out for every parade that happened at the aerodrome. Accidents could be reduced by fifty per cent. if we had a real engineering personnel.

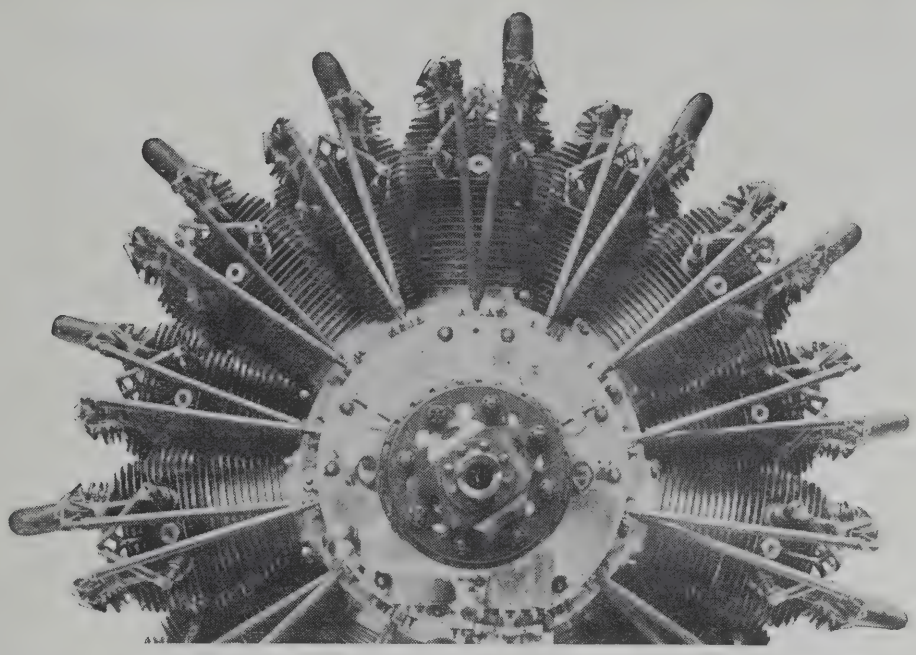
[One is strongly inclined to agree with Admiral Sueter that the time has now come when the Air Force should have a definite Engineering Branch composed entirely of highly trained engineers analagous to the Engineer Officers, R.N., of the pre-war days who were trained at Keyham. They were very different from the Lieutenant (E), R.N., of to-day who is merely a watchkeeper with a mechanical smattering acquired on what is called an "engineering course." One believes that if the R.A.F. established a separate branch of really skilled and highly trained engineers, as separate perhaps from the flying personnel as are the Medical Service and the Works and Buildings people, the R.A.F. would in a very few years come right out on top of the Navy, simply because the engineering branch of the Navy is going to pieces through lack of properly trained engineers.]

Continuing, Admiral Sueter asked what the Air Ministry was doing to help the Trade to sell aircraft? We could not sell battleships nowadays but we could sell aeroplanes. The French Government encouraged their firms to sell as much as possible abroad.

On the subject of research Admiral Sueter said the very last thing we ought to do was to standardise machines. Improvements were coming along every day. He recalled the standardisation of the B.E.2.C. before the War, and the difficulties into which it had got the Army.

Referring to airships he said that he had been to Cardington and was pleased to see that the new cover of the old R.33 fitted like a kid glove but he was disappointed about the experiments he saw with girder work. He wanted to see a lot more done in that direction. Also he hoped that samples of outer covers and gas-bags would be sent out to Egypt to see how they stood the climate before they sent out a whole shipment. He suggested that we should have two or three non-rigid ships of 400,000 cubic feet or so to train a crew before sending them up in the big ships. He wanted to know whether the pilots who were going to handle the ships would be permitted to criticise the design of the ship to be built by Commander Burney. After all they had to handle the machines.

Turning then to the Fleet Air Arm Admiral Sueter [who knows more about the Admiralty than most people] said that the Admiralty used to have an Air Service but they smothered it in its infancy and then threw it overboard. He challenged the Honourable Member for a Manchester Division who said that the Air Ministry had failed to deliver the goods to the Navy. The Admiralty had refused to allow the R.N.A.S. to have airships at the battle of Jutland. They blocked



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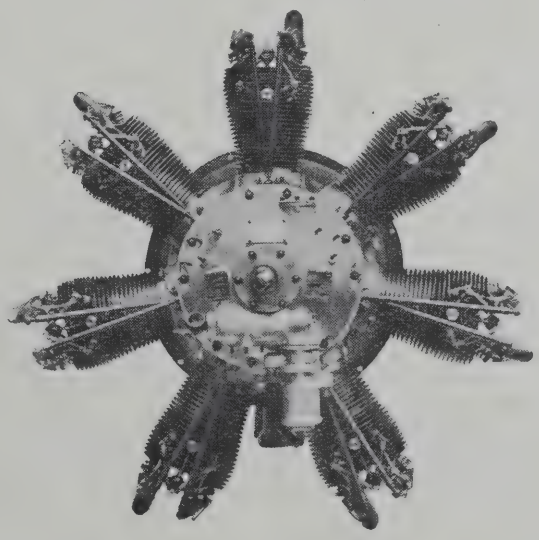
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The
JAGUAR
385-425 h.p.
14-cyl. Air-cooled.

This engine represents the highest point yet reached in the development of the air-cooled aero engine. The design has been the subject of searching tests both on the brake and in flight.

The following is the guaranteed minimum performance:—

At normal speed,
1,700 r.p.m. 400 b.h.p.
Petrol consumption,
·55 pts./b.h.p. ·312 Litres per b.h.p. hour.
Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
760 lbs., 346 kgs.



The
LYNX
170 h.p.
7-cyl. Air-cooled.

The "Lynx" is an ideal engine for Training Aircraft. It is most accessible—being superior in this respect to any other aircraft engine. Fuel consumption is very low and construction very simple.

The following is the guaranteed minimum performance:—

At normal speed,
1,650 r.p.m., 175 b.h.p.
Petrol consumption,
·55 pts./b.h.p. ·312 Litres per b.h.p. hour.
Oil consumption, ·03 pts./ b.h.p. ·017 Litres per b.h.p. hour.
Weight complete,
460 lbs., 209 kgs.

the creation of the torpedo machine. They blocked the creation of aircraft carriers. Even as early as 1913, when Lord Graham submitted a design for a seaplane carrier everything the R.N.A.S. tried to do was blocked by the Sea Lords of the Admiralty and then they got people to go to the House and demand that they should have a Naval Air Service again.

He asked a brother Admiral in the House who was a great gunnery expert whether right up to 1914 any of the Captains of H.M.S. *Excellent* [the gunnery depot] ever tried to help the Naval Air Service to develop air spotting, or whether Lord Beatty ever did a single thing to help improve the shooting of his squadron by developing air spotting?

[A thoroughly good fighting speech, full of sound sense and by a long way the best thing Admiral Sueter has ever done in the House. It is most encouraging to see that the old brigade of air politicians, if one may call them so, not only keep up the fight but improve in their strategy and tactics.]

Major-General Sir John Davidson agreed with Sir Archibald Sinclair that construction should proceed more quickly. He had an uncomfortable feeling that the importance of the Air Service in Imperial Defence was not getting proper recognition either from the House or from the Public or from the Army and Navy. He said that there should be co-ordination between the three Services. They could see quite clearly that the Navy and the Air Service as represented in the House still took opposing views. What was wanted was a Chief of War Staff to co-ordinate the work of the three Services.

He suggested that the system of defence of our coaling and oiling stations, defending ports, bases, strategic points and so on was wrong. Aircraft could not be used at Gibraltar and ships could not use the port if any considerable aircraft force opposed them. We only had four or five machines at Malta for the actual defence of the place, apart from the Fleet Air Arm. Aircraft ought to play a much more important part in the defence of the Suez Canal.

The Under-Secretary of State for Air, Major Sir Philip Sassoon, referred to the admirable speeches which had just been delivered. He assured the Members that the Air Ministry was fully alive to the importance of doing everything it could to stimulate Civil Aviation and looked forward hopefully to the time when civil flying would occupy the same relative position towards the R.A.F. as the Mercantile Marine now occupies towards the Navy. Money available for Civil Aviation was strictly controlled by the prior claims of Home Defence.

The development of the Military Air Force in France had progressed so rapidly during the last few years that further development of defence was not imperative and so the French could spend more money on civil flying. In Germany there was no Military Air Power at all, consequently all available money could be spent on civil flying.

He explained to Sir Frederick Sykes that the fact that nearly three-quarters of the personnel to the Chief of the Air Staff were concerned with Works and Buildings was due to the necessity for housing the Home Defence Force. The greater part of this personnel was employed temporarily during the expansion scheme.

As to the maintenance of aircraft he pointed out that in 1918 81 men were required to keep one machine in a Service unit. In 1923 the figure had dropped to 65 and in 1924 it had dropped to 51.

He refused to say whether Imperial Airways was to take over the Cairo-Baghdad service because the matter would not be decided until Sir Sefton Brancker, Director-General of Civil Aviation, had returned from his trip to the East.

On the subject of comparison of French figures Sir Philip pointed out that if you took away the Army co-operation machines in France and the Army co-operation machines in England the French striking force was still in a majority of three to one against the R.A.F.

Replying to an interjection by Captain Benn, Sir Philip told the House that he did not invent the term "Fleet Air Arm," he would have found something far more suitable if it had been left to him. The Admiralty had been left to prescribe and justify to the Treasury and to Parliament the scope and scale of requirements which they thought necessary for the Fleet Air Arm but it was the duty of the Air Force to supply them with the material.

He assured Sir Archibald Sinclair that the Government did accept without reservation the absolute and unified control of the Air Force by the Air Minister.

On the subject of aeroplane designs he pointed out that in a great open country like France there was ample accommodation for landing grounds and forced landings could be made with less risk than in our own restricted country. Therefore French machines could afford to land at a greater speed than here. [This is really a comic argument. What makes high speed landing dangerous is not the size of the ground, but the quality of it. If a machine has to land at 90 miles an hour in a ploughed field or on a boulder-strewn hillside it does not matter very much whether the nearest hedge is 20 yards away or 20 miles away, the machine will go over in any case.]

He saw no reason to believe that our own machines are not just as good as those of any other country. The Ministry had no false pride. They were perfectly willing and ready to accept hints from any quarter. The fact that we had bought an American parachute was a proof of that.

On the subject of flying by night and landing by night and in fog Sir Philip said that we had got very good results from directional wireless from the ground to the machine. The "leader cable" system of landing was being tried for night landing and various fog lights were being tried. One system of lighting illumined the upper surfaces of a fog to a distance of 800 yards. Guided by these lights a machine could get within the range of the leader-cable and then land.

Referring to the flying-boat service in the Channel, Sir Philip said that the Channel Island Service had been stopped for the present time and that it was impossible to fly to Cherbourg because the French objected to the use of their fort by commercial aircraft. [Why they should object to aircraft flying to Cherbourg when the port is used by Atlantic liners and when the fortress in any case, as a fortress, is obsolete it is difficult to explain. The only reasonable explanation is that the French are not fond of seaplane flying and are jealous of an English seaplane line developing cross-Channel traffic.]

As to new air-lines Sir Philip said that they would entail a very large subsidy on the part of the Government and funds were not available. It was a great pity that matters relating to the air were tied by the terrestrial shackles of finance.

Imperial Airways were flying a million miles per annum according to properly checked figures and were up to the schedule of their contract.

Replying to an interjection by Admiral Sueter Sir Philip assured him that Imperial Airways were building new machines and keeping up-to-date. People did not realise what the Ministry was doing for commercial flying.

Honourable Members might be surprised to know that the Meteorological Office, which was only known by its appearance in newspapers and the sad message it had for us there, was carrying out work which was increasing in importance every year to commercial and civil flying.

The civilian training schools were increasing the supply of pilots, and the inspection and control of civilian machines was establishing a standard of safety which the public could trust. The Air Ministry was keeping in close touch with flying in the British Dominions.

Replying to Sir Frederick Sykes Sir Philip said that the Cairo-Baghdad route was run merely as a staff exercise and as such it had been extremely successful. In defence of the Royal Aircraft Establishment he said that if it were abolished it would be a severe blow to aeronautical research and it had nothing to do with aircraft construction. He said that if Admiral Sueter would come round to the Air Ministry and express his views it would be an immense help to the technical staff.

As to the small number of observers mentioned in the Estimates Sir Philip said that it was no part of the policy of the Air Ministry to supply observers for Army and Navy work. The R.A.F. trained Army and Navy officers for the work.

Research into air defence from the ground was showing extremely good results but he could not give information about helicopters and wireless directional work as that was of the most secret character. [So far as helicopters are concerned one believes that the secret is really that the Treasury is afraid to disclose the nature of its contract with Mr. Brennan and the amount of money which it has been forced to spend under that contract.]

Sir Philip said that he thought he might say that helicopters had "made distinct limited strides"—[a delightful phrase].

Finally Sir Philip paid a tribute to "The splendid young men in Service and civil flying who are carrying on the wonderful traditions of our airmen during the Great War." [All Sir Philip Sassoon's replies go to show that we have in him a very able and competent Under-Secretary who can be trusted to give straight answers to straight questions and avoid that species of half truth with which certain officials in the past used to irritate and exasperate the House.]

Mr. Ammon pointed out that we were now actually engaged in building an Air Force against our old allies the French at the expense of money that ought to be paid to us. We were evidently being committed again to a great armament race. He said that Civil Aviation should be under the Board of Trade as is the case with merchant shipping and should not be considered solely from the military side. He hoped the Air Ministry would get away from the present divided control.

Lieut.-Commander Burney congratulating Sir Samuel Hoare on his return to office said that if the emptiness of the benches in the House showed the confidence Members had in the Secretary of State for Air he ought to feel gratified. [It is an astonishing fact that although everybody recognises the importance of aviation Air Debates draw a smaller attendance than any other subject. It may be that Commander Burney has in fact spoken the truth in jest and that Members do not trouble to attend Air Debates because they have confidence in the Air Ministry.]

Continuing, Commander Burney said that our expenditure on armaments was at the rate of 2s. in the Pound on our Income Tax. Before the War we had a false doctrine about the Army. We relied on the Navy for our defence and there was much wasteful expenditure on inefficient armaments. [It is interesting to note that the Army through its anti-aircraft guns, searchlights and observation posts performed the major share of the work of defending this country against air invasion whereas the Navy did nothing, even warnings of approaching enemy aircraft were not correctly transmitted by the Navy from its ships and coastal stations.]

Commander Burney objected to a fighting department either interfering with or trying to assist in commercial development. The work of Air Ministry inspectors should be a function of the Board of Trade. We did not find the Admiralty running destroyers for test purposes as mail boats between Malta and Gibraltar but the Air Ministry ran aeroplanes between Cairo and Baghdad. Similarly we do not find the Admiralty interfering with the building of a Cunard liner. [One is under the impression that the Admiralty has a great deal to say to the building of those ships which are to be subsidised as auxiliary cruisers.]

He thought that more imagination was needed in assisting Civil Aviation. On the subject of the Home Defence Air Force Commander Burney said that the Dominions did not understand our providing for the defence of this country and turning down the Singapore project. He warned the House that both Canada and Australia might well turn towards America for support. Therefore it was essential that we should do everything possible to strengthen the bonds of Empire. [Any closer understanding between Australia, Canada and the United States must tend towards that Nordic alliance which is bound to come sooner or later.]

Arguing along these lines Commander Burney proceeded to advocate a combined Navy, Army and Air Staff and further argued that the Admiralty and the Air Ministry should become one department.

He said that if we admitted that the defence of these islands was aerial, we had to mark where our defence was going to start. Was it going to start with aeroplanes from carriers out at sea or with seaplanes from our own harbours or with aeroplanes from aerodromes in this country? Obviously it would start as far out as possible. If the defences of these islands were aerial what was the use of keeping out-of-date stations like Chatham and Sheerness which were only dockyards for the maintenance of light craft.

Fighting forces to-day were either carrier forces or holding forces.

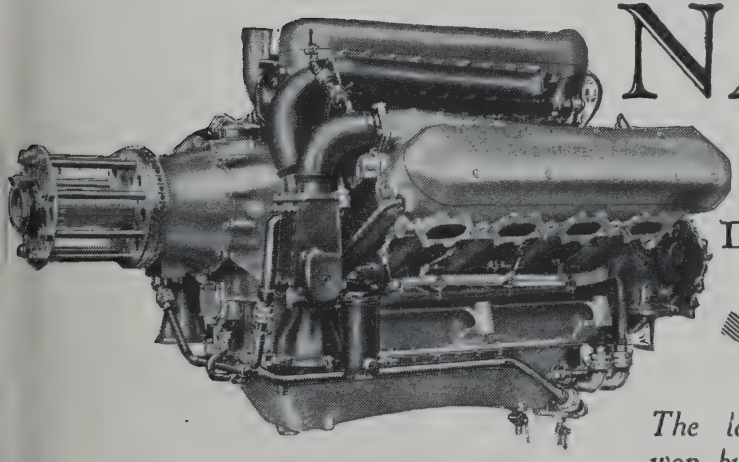
"It seems a great pity that all . . . were not equipped with NAPIERS"

THIS *extract occurs in the following report from "The Aeroplane" of Feb. 11, 1925, and applies to commercial aeroplanes. It is the same for racing or war service— fit the Napier aero engine and —*

Be Safe *not* Sorry

"The Napier-engined Vickers-Vulcan is now on the regular service. It gets off with 8 passengers like a scout and is quite fast in the air.

It seems a great pity that all the Vulcans were not equipped with Napiers two years ago. Moreover the landing speed of this type is remarkably low and it is said to be easy to fly."



NAPIER

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The last three Aerial Derbys have been won by a Napier-engined Gloster aeroplane

Aeroplanes and ships could transport and act independently but could not hold, whereas the Army could hold. We must have a unified air command. Either the Admiralty would swallow the Air Force or the Air Force would swallow the Admiralty, it did not matter in the slightest which it was. Either way we should save £5,000,000 to £19,000,000 a year.

Mr. Spencer raised the point of the age at which officers became entitled to a marriage allowance. The age in the Army was 26. Why should it be 30 in the Air Force? It was particularly hard on the dependents of young married officers who were killed while flying.

Lieut.-Colonel Sir Alan Burgoyne sympathised with Mr. Spencer's argument. Continuing he advocated unity of purpose throughout our whole scheme of defence. We could not allow the Air Force to go back under the Admiralty and therefore he could not agree to a wedding between the Admiralty and the R.A.F. but he believed that the Navy might be swallowed by the Air Force. What we should aim at was surely a central Ministry of Defence.

On the subject of Civil Aviation he said that the record of the work done should not be in terms of flying but in terms of making a profit. Referring to accidents in Civil Aviation he said that they should be reported to relatives of those killed as quickly as possible, and that an appeal should be made to the Press not to make too much of such accidents. He said that the allowance for Civil Aviation in the Estimates was insufficient, and that we should get rid as quickly as possible of single-engined machines.

Colonel Josiah Wedgwood, referring to the fact that Colonel Burgoyne had been absent from the House for some years, regretted that in his "reconditioned maiden speech" he should have felt it necessary to go for the Air Minister every five minutes. This was a House of co-operation and they should collaborate with the Government in an attempt to secure economy.

Commander Bellairs said that the whole question of economy was to be solved in the suggestion that one supreme Minister should be able to say to experts "Is it vital or useful? If it is useful we cannot have it; if it is vital we must have it." We owed the idea of a Ministry of Defence to Lord Randolph Churchill and his minority report in 1886.

On the subject of the promotion of air officers Commander Bellairs said that the life of an air officer was not much more than eight or nine years and asked what his outlook was when his flying time came to an end. [One might as well ask what becomes of a cavalry subaltern if he is not promoted to command a troop and in due time a squadron or when he is too old or fat to do a cavalryman's job. Equally one might ask what becomes of an infantry officer when he cannot march.]

Proceeding, he argued that the Air Force depended on the Navy for its maintenance and its supplies of petrol, oil, steel and other materials.

[One would point out that these supplies are brought in merchant ships which our experience in the War 1914-18 shows can be escorted by aircraft rather better than by sea craft.]

He argued that air defence was expensive because the life of machines was so short, the wastage in war being about fifty per cent. per month, as compared with a battleship the average life of which was twenty years. [Experience of 1914-18 seems to show that the life of a battleship when it came out of a protected harbour and really got into action or when it met a German submarine was about twenty minutes. The rest of a rather long speech was based on similar false premisses.]

Rear-Admiral Beamish speaking as a life-long pacifist said that a Defence Ministry was the best possible thing we could have for controlling the great spending Departments of the fighting forces. He said that it was not right to deny the Navy the use of an element on which it had relied for hundreds if not thousands of years for its propelling force. The Navy had never been able to exist without the air. He had never been able to see the necessity for a separate Air Ministry which only complicated Imperial defence.

Thereafter the Admiral made a considerable speech discussing the use of aircraft essentially from the point of view of the ship man and made the astonishing assertion that according to the Navy List there were something less than 30 aeroplanes to carry out all the Navy's duties at sea.

[One imagines that there must be something like four times as many Fairey IIID seaplanes alone, without counting all the deck flyers and spotters and so forth. Evidently what Admiral Beamish has done is to count up the 26 assorted aircraft enumerated in the five special flights constituting Coastal Area units. He has entirely omitted all machines on the four aircraft carriers *Argus*, *Hermes*, *Eagle* and *Pegasus*, all the machines of the eleven aircraft flights at fleet co-operation stations and at three R.A.F. bases for the Fleet Air Arm and all the flights at fleet co-operation stations abroad and the seaplane base at Malta and the seaplane base at Alexandria. That is an excellent specimen of the Navy's way of compiling statistics.]

He advocated subsidising firms to build "a great merchant fleet of airships." Finally he said that anything in the way of State Control of craft (either sea or air) had failed, that State Control of aircraft must be avoided, that the Air Ministry should be dropped, that private enterprise in aircraft should be encouraged and that the Air Ministry should be absorbed under the War Office and the Admiralty.

Captain Wedgwood Benn said that with great respect he did not think that Admiral Beamish understood the beginning of the outlook of the Air Force. His own view was that we should reduce our expenditure on the older Services and increase the expenditure on the Air Force. He said that we should never get an air force so long as people were told that air experience was merely an interlude to a career in some other profession.

[That is a very good point and it is one of the strongest arguments against the Short Service system. An aviator's career should be a life job.]

On the subject of aircraft carriers Capt. Benn wanted to know why the Admiralty should design them. Lots of people could design ships as well as the Admiralty and the aircraft carrier was not primarily a ship but an aerodrome, so that it came within the technical knowledge of the Air Force and not of the Navy. Whatever branch of the air service one examined one found it had nothing whatever to do with the sea. Till we made that a root principle of our air defence we should never get an air service nor deserve one.

Why should not an Air Force officer command an aircraft carrier? Most of their duties had to do with the air. The ship had to be navigated but that was not the most important thing. The ship was a floating aerodrome and would be far better under the command of an air officer. The recommendations of the Balfour Committee seemed all wrong. They aimed at making the career of the man who flies a naval career and wanted to make a man look to the Admiralty for his career instead of to the Air Ministry.

Referring to the Admiralty money which appears in the Air Estimates Capt. Benn said that the Admiralty paid the piper and would call the tune. They already had the young officers under their control and they hoped to have control of design and everything.

(To be continued.)

Air Defence in the House of Lords.

In the House of Lords on Mar. 11, the Duke of Sutherland, Under Secretary of State for Air in Mr. Baldwin's previous Government asked whether the Government was satisfied with the present rate of increase of the Air Force in view of the fact that it would take twenty years at the present rate to bring our Air Force to the level of the French Air Force, or whether they were relying on a World Disarmament Conference at any future date to make any further increase unnecessary.

His Grace quoted figures for the French Air Force and the R.A.F. saying that the French have 990 machines at home and 270 overseas against our 312 aeroplanes at home. He suggested that we should accelerate our building and training programme by spending more money.

As an alternative he said that a mutual security pact with France was possible in which we would secure France's position on the sea while France guaranteed our position in the air. He admitted that this would have the objection of making us dependent on another power for our air strength.

The third alternative was the calling of a World Disarmament Conference. He pointed out that it was difficult to include the aerial arm in any disarmament scheme because civilian machines might be converted into bombing machines.

The Marquess of Salisbury, Lord Privy Seal, replying for the Government, said that the Noble Duke and the House ought to take account of the progress which had been made during the last two years. The process of expansion would quicken much more rapidly towards the end of the period of expansion. He drew attention to the economic which it was hoped to effect by forming Special Reserve Auxiliary Squadrons.

The Lord Gorell asked why if we were anxious to limit armaments our Government could not take the initiative instead of waiting for a favourable opportunity. He suggested that one method of limiting armaments was to limit the number of war pilots trained.

The Earl Beauchamp regretted that other countries had not thought it more important to pay their debts than to increase their armed forces. He supposed that the expenditure under the new programme would be no greater than it would have been if there had been no change of Government.

[The foregoing is the briefest possible précis of the proceedings which have been quite voluminously reported in the daily press. All the arguments used on both sides are already well known to readers of this paper and consequently these notes are only published in order to place on record the fact that the discussion took place.

It is just as well that the question of air defence should be discussed as often as possible for the education of the public. But those who are on the inside of aeronautical affairs and who are able to watch history in the making, as are the readers of The Aeroplane, know that the Air Ministry is doing all that can be done to assure the safety of the country in case of an invasion by air.

So far as actual defence is concerned, one would point out that anti-aircraft guns, with their necessary accessories, are if anything more effective than night-flying aeroplanes.

As to the numbers of our aeroplanes, there are two objections to ordering any vast quantities. One is that there is no use in having quantities of aeroplanes until we have mechanics trained to keep them in order. The other is that at the present moment there is no one type of aeroplane in this country which could safely be standardised for mass production, firstly because we have no machine of sufficiently high performance and secondly because such machines as we have are nearly all built of wood and therefore could not be put into mass production in time of war simply because there is no timber with which to build them.

Therefore the Air Ministry are quite justified in maintaining a slow but steady rate of expansion until such time as rapid expansion becomes either advisable or a vital necessity.—C. G. G.]

Air Affairs in Parliament.

WAR-TIME AERODROMES.

In the House of Commons on Mar. 11, in reply to a question Capt. A. Evans, the Secretary of State for Air said that the policy of the Air Ministry in connection with the scheme for the expansion of the R.A.F. was to re-open war-time aerodromes in preference to acquiring new sites whenever this course is the more economical and meets operational requirements.

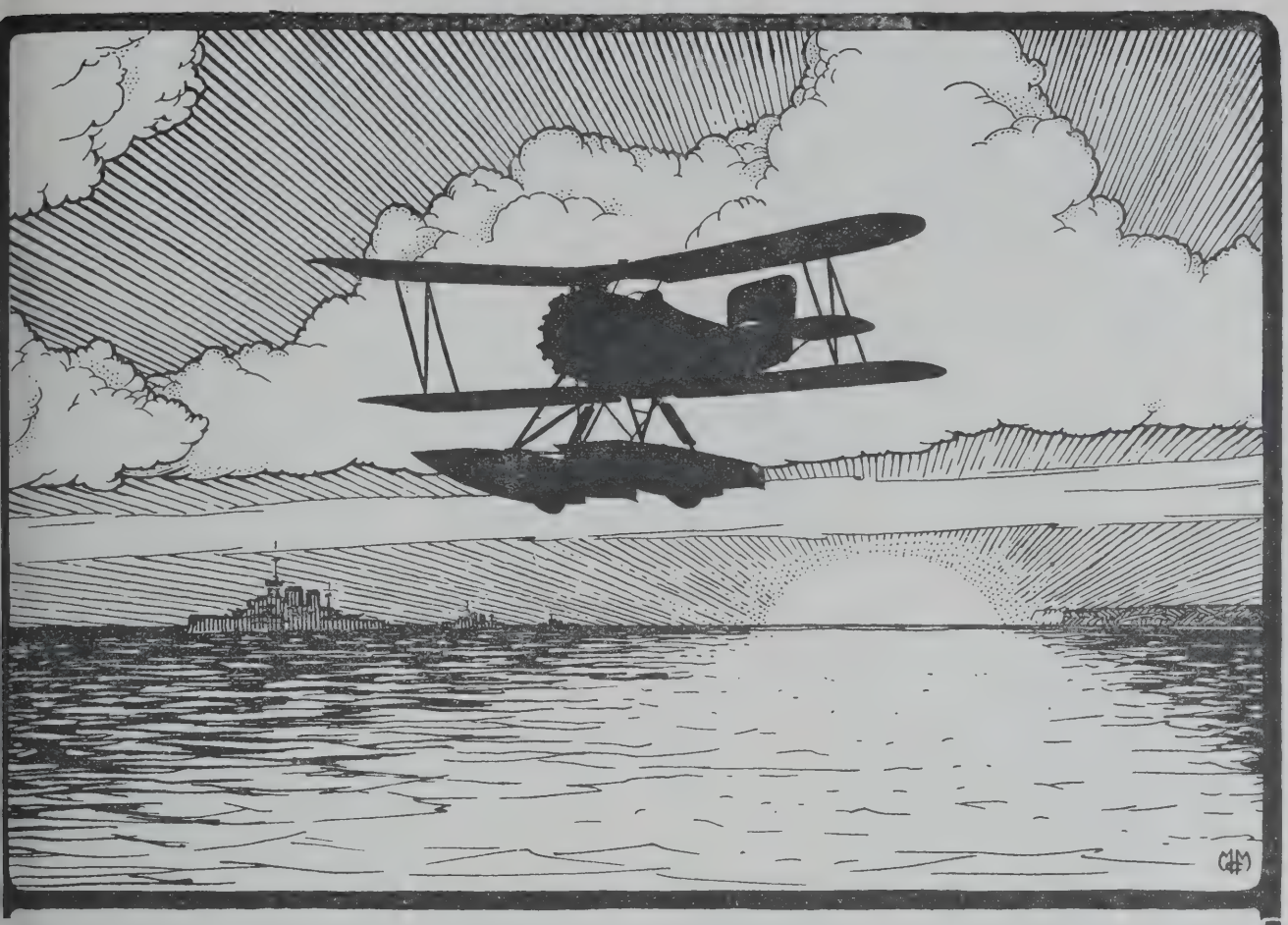
AIRSHIPS.

In the House of Commons on Mar. 11, in reply to Mr. Wells, who asked the number and size of the airships now in use in America, the Secretary of State for Air supplied the following information:

United States of America Army Air Service: One small non-rigid airship of 43,000 cubic feet capacity. One small non-rigid airship of 130,000 cubic feet capacity. Six small non-rigid airships of between 180,000 and 200,000 cubic feet capacity each. One small non-rigid airship of 326,500 cubic feet capacity.

United States of America Army Air Service: One small non-rigid airships of between 170,000 and 182,000 cubic feet capacity each. One rigid airship (Z.R.1.) of 2,100,000 cubic feet capacity. One rigid airship (Z.R.3) of 2,472,000 cubic feet capacity.

[Strictly speaking Z.R.3. is a civilian ship belonging to the U.S. Government and is only on loan to the U.S. Navy for training and experimental purposes.—Ed.]



A Silhouette of the FAIREY "FLYCATCHER" AMPHIBIAN.

The Fairey Flycatcher is one of the most extensively used single-seat fighter aircraft in the service of the Royal Air Force.

It will be recollected that it was land type Flycatchers which came to the rescue of the "Merchantman," "John Henry," at last year's R.A.F. pageant: the Flycatcher land type machine is converted to an amphibian, as depicted above, by a change of undercarriage.

A notable feature of both land and amphibian type Flycatchers is their remarkably low landing speed, which makes them especially suitable for alighting in restricted areas such as a ship's deck.

The Fairey Aviation Company Ltd.

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Works also at:
HAMBLE, near SOUTHAMPTON.
Telegrams: "Airily," Hamble. Telephone: 17 Hamble.

THE ROYAL AIR FORCE.

The London Gazette.

Mar. 10.

General Duties Branch.—The following Flt. Offs. are promoted to the rank of Flg. Off. :—H. L. R. Gough (Jan. 14); N. J. Wiltshire (Feb. 14); R. Scott-Taylor (Feb. 15); S. R. Sunnucks (Mar. 9); G. J. Gaynor (Mar. 12); T. R. Wheatley (Mar. 14). Flg. Off. G. N. Carroll (Lt., R.N., retd.) is granted the hon. rank of Flt. Lt. (Jan. 27); Flg. Off. E. R. Stafford is transferred to the Reserve, Class C (Sept. 2, 1924); Flt. Lt. R. B. Waite relinquishes his S.S. comn. on account of ill-health and is permitted to retain his rank (Mar. 11); Flg. Off. R. F. Browne relinquishes his S.S. comn. on account of ill-health (Mar. 11).

Stores Branch.—Flg. Off. J. J. Ironmonger is granted a perm. comn. in the rank stated (Mar. 11); Flg. Off. C. E. Whinney is placed on the retired list (Mar. 11).

Accountant Branch.—The following are granted perm. comns. as Plt. Offs. on probation, with effect from Feb. 23, and with seniority of Nov. 10, 1924 :—A. McBroom, G. Goodall.

Medical Branch.—Flt. Lt. A. F. Rook, M.R.C.P., D.P.H., is promoted to the rank of Sq. Ldr. (Mar. 8).

Reserve of Air Force Officers.—H. V. Stammers, D.F.C., is granted a commission in Class A, General Duties Branch, as a Flg. Off. on probation (Mar. 10); W. W. Saunders is granted a commission in Class B, General Duties Branch, as a Flg. Off. (Mar. 10). The following are confirmed in rank :—Flg. Offs.—J. C. Croft (Feb. 12); D. M. Deighton, A.F.C. (Mar. 9). Plt. Off.—R. A. Coulthurst (Feb. 14).

Plt. Off. G. Goodall resigns his comn. (Feb. 23).

The commissions of the following Plt. Offs. on probation are terminated on cessation of duty :—C. P. Abbott (Dec. 2, 1924); B. Spaven (Feb. 17).

Mar. 13.

Medical Branch.—Group Capt. N. J. Roche, O.B.E., is placed on half-pay, Scale A (Mar. 7).

Appointments.

Week ending Mar. 16.

General Duties Branch.—Air Commodores D. L. G. Pitcher, C.M.G., C.B.E., D.S.O., to No. 7 Group H.Q., Andover, to command, 1/4. A. M. Longmore, C.B., D.S.O., to Air Ministry on appointment as Director of Equipment, 1/4.

Group Captain W. R. Freeman, D.S.O., M.C., to Central Flying School, Upavon, to command, 22/4.

Squadron Leaders N. F. D. Buckeridge, to Air Ministry, 1/4. J. T. Whittaker, M.C., to Aircraft Depot, India, 6/3.

Flight Lieutenants E. R. Whitehouse, to No. 9 Sqdn., Manston, 20/3. G. W. Biles, D.F.C., to No. 5 F.T.S., Sealand, 16/3. B. R. Carter, A.F.C., to No. 99 Sqdn., Bircham Newton, 19/3. W. V. Hyde, to No. 3 Sqdn., Upavon, 19/3. W. H. Dunn, D.S.C., to School of Army Co-operation (No. 16 Sqdn.), Old Sarum, 28/3. A. D. Pryor, to Air Ministry, 14/3. J. W. Jones, to Aeroplane and Arm. Exper. Estab. (No. 15 Sqdn.), Martlesham Heath, 1/4. J. F. T. Barrett, D.F.C., to Exper. Section, R.A.E., Farnborough, 10/4. J. A. Slater, M.C., D.F.C., to No. 3 Sqdn., Upavon, 1/4. W. E. C. B. C. Forsyth, to School of T.T. (Men), Manston, 18/4. H. I. T. Beardsworth, to No. 99 Sqdn., Bircham Newton, 1/4. G. A. H. Pidcock, to No. 7 Group H.Q., Andover, 27/2. S. E. Adams, to Armament and Gunnery School, Eastchurch, 23/3. S. A. Turner, M.B.E., to No. 2 F.T.S., Digby, 2/3. W. V. Simons, to No. 1 F.T.S., Netheravon, 2/3. N. C. Saward, to No. 3 Sqdn., Upavon, 16/3.

Flying Officers W. G. Jones, to No. 99 Sqdn., Bircham Newton, 18/3 F. C. T. Rowe, to H.Q., Palestine, 24/2. H. A. J. de S. Barrow, to School of Army Co-operation (No. 16 Sqdn), Old Sarum, 16/3. G. R. Oliver, to Electrical and Wireless School, Flowerdown, 13/4. W. R. Day, to No. 56 Sqdn., Biggin Hill, 31/3. F. K. Damant, D.F.C., to No. 41 Sqdn., Northolt, 1/4. W. Morgan, to I.A.A.D., Henlow, 1/4. T. N. Stack, to No. 58 Sqdn., Worthy Down, 22/4. H. J. Toye, to No. 1 School of T.T. (Boys), Halton, 1/4. C. G. Halliday, to Exper. Section, R.A.E., S. Farnborough, 16/3. V. Croome, to I.A.A.D., Henlow, 17/3. C. H. V. Hayman, to Boys' Wing, Cranwell, 27/3. R. W. Hill, to No. 39 Sqdn., Spittlegate, 16/3. W. N. Sherlock, to No. 11 Sqdn., Netheravon, 30/3. H. M. Kirk, D.C.M., and E. A. Scales, to Inspector of Recruiting, 1/4. S. H. Cooper, to School of Army Co-operation (No. 16 Sqdn.), Old Sarum, 16/3.

Medical Branch.—Group Captain H. Cooper, D.S.O., B.A., to H.Q., Inland Area, 7/3. Flight Lieutenant P. A. Hall, M.B., B.A., to No. 1 School of T.T. (Boys), Halton, 17/3. (Hon. Sq. Ldr). W. R. Reith, to Central Medical Board, Hampstead, 30/3. Flying Officer L. C. Palmer-Jones, M.B., to No. 1 School of T.T. (Boys), Halton, 12/3.

Stores Branch.—Flight Lieutenant T. J. Organ, to H.Q., Coastal Area, on transfer to Home Estab., 16/5. Flying Officers R. G. Fussell, to H.Q., Egypt, 7/3. F. E. Shersby, to R.A.F. Base, Malta, 27/2.

Accountant Branch.—Pilot Officer A. E. West, to R.A.F. Base, Leuchars, 19/3.

Chaplains' Branch.—The Revd. J. H. P. Still, B.A., to Station Commandant, Iraq, 21/2

The Secretary of State for Air.

The Times of Mar. 7 states :—

It is officially announced that the Secretary of State for the Colonies and the Secretary of State for Air will visit Iraq and Palestine on official business during the Easter Recess. As at present arranged, Mr. Amery and Sir Samuel Hoare, accompanied by officials of the Colonial Office, and of the Air Ministry, will leave England on Mar. 19, and will return towards the end of April.

The King's Levee.

By Command of the King, a Levée was held on Mar. 10 at St. James's Palace by His Royal Highness the Prince of Wales on behalf of His Majesty.

Among those in attendance upon his Royal Highness was Air Marshal Sir John Salmond, Principal Air Aide-de-Camp. Group Captain Cecil Kilner, Aide-de-Camp-in-Waiting, was also present.

Among those who attended the Levée was the Secretary of State for Air and Air Vice-Marshal Sir Geoffrey Salmond.

The following officers of the R.A.F. were presented to His Royal Highness by the Secretary of State for Air :—

Collins, Flt. Lt. H., on first appointment.
Elliott, Flt. Lt. A., on first appointment.
Field, Sq. Ldr. R., on first appointment.
Fry, Flt. Lt. W., M.C., on first appointment.
Gould, Wing Cdr. C., on first appointment.
Grenfell, Sq. Ldr. E., D.S.O., M.C., on appointment.
Hampton, Flt. Lt. H., D.F.C.
Kilner, Group Capt. C., D.S.O., A.D.C., on appointment as Air Aide-de-Camp to the King.
Laws, Sq. Ldr. F., O.B.E., on appointment.
Newall, Air Commodore C., C.M.G., C.B.E., A.M., on promotion.
Nicholl, Flt. Lt. W., on first appointment.
Padley, Flg. Off. A., on first appointment.
Salmond, Air Marshal Sir John, K.C.B., C.M.G., C.V.O., D.S.O. A.D.C., on appointment as Principal Air Aide-de-Camp to the King.
Scarlett, Air Vice-Marshal F., C.B., D.S.O., on appointment as Air Officer Commanding, Coastal Area.
Sowrey, Sq. Ldr. F., D.S.O., M.C., A.F.C., on appointment.
Wright, Flt. Lt. F., on appointment.

Waziristan Honours.

The following award for valuable services rendered in the field by the R.A.F. in connection with military operations in Waziristan, Apr. 21, 1923, to Mar. 31, 1924, was gazetted on Mar. 13 :—

Distinguished Flying Cross :—Flt. Lt. T. F. W. Thompson.

The names of the following officers and men of the R.A.F. have been brought to notice for distinguished service during the Waziristan operations by General Lord Rawlinson, Commander-in-Chief in India :—

Ford, Flg. Off. H., D.F.C.; Chadwick, No. 343192, AC.1. R. Webb, No. 314431, F-S. W.

The Shaibah Accident.

The Air Ministry announces :—

The remains recently discovered in the desert in Iraq have been definitely identified as those of Flt. Lt. William Conway Day, M.C. and Flg. Off. Donald Ramsay Stewart, who were reported missing after making a forced landing on the morning of July 24, 1924.

Rescue machines discovered the damaged aeroplane on the afternoon of the same day, and footprints were traceable for about 40 yards in the direction of Jalibah Railway Station. Some rations and a drum containing 3½ gallons of water were found in the aeroplane and from the position of the drum with a funnel resting on it it is presumed that the officers had filled their water-bottles before leaving the machine. From traces of blood which were found on the machine it appeared that the pilot, Flt. Lt. Day, had sustained a slight injury, but no message had been left in the machine and in spite of exhaustive search by every available means for four days no trace of the missing officers could be found.

In the light of the recent discovery it is considered probable that on account of Flt. Lt. Day's injury both the officers were prompted to seek assistance at the Railway Station at Jalibah, about 12 miles due north of the spot where the aeroplane landed, but from the position where the remains were found it was obvious that the unfortunate officers had lost their way in the attempt.

In view of the time of day and the season during which they were subjected to exposure, there is no reasonable doubt that death ensued from heat exhaustion.

The Dunning Memorial Cup.

The Dunning Memorial Cup which is given annually to the officer who is considered by the Air Council to have performed the most distinguished service in connection with co-operation with the Navy has been awarded to Observer Officer William Arthur Thompson, School of Naval Co-operation, Lee-on-Solent, for 1924.

The Rhymes of Rufus Ruderbar.

A Recipe for Success.

(*Successful One Loquitur.*)

Come one, come all, lend me an ear!
(Blow the trumpet, brother)
My success let all men hear!
(Blow the trumpet, brother)
Blow the trumpet loud and long!
Clash the cymbals, beat the gong!
Praise goes to him who bloweth strong!!
(Blow the trumpet, brother)

He who'd win success must boast!
(Blow the trumpet, brother)
If of it he'd make the most!
(Blow the trumpet, brother)
Blow the trumpet loud and clear!
Let everyone its fanfare hear!!
Everyone from far and near!!!
(Blow the trumpet, brother)

Loudest of all hath been my horn!
(Blow the trumpet, brother)
The laurels shall by me be worn!
(Blow the trumpet, brother)
Success to me must be allowed!
Every head to me be bowed!!
For I have blown my horn most loud!!
(Blow the trumpet, brother)

(*Exit, still blowing*).

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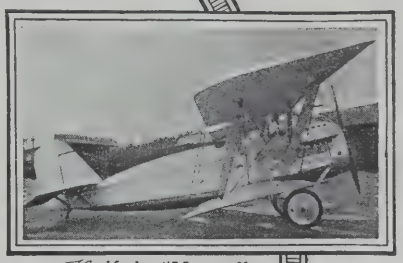


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AEROPLANES, FLYING BOATS, AMPHIBIANS AND SEAPLANES for Commercial, Military and Naval Use.



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The Vickers "Vixen" A Military Two-seater.



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THE R.A.F. *VERSUS* THE ARMY.



THE R.A.F. SKIPPER IN ACTION.—Sq. Ldr. Russell in centre, Flg. Off. Rose on left, Flt. Lt. Chick on right.

The final round of the Services Rugger Championship was played at Wembley Stadium on Mar. 14, and resulted in a draw, both sides scoring two unconverted tries.

The first noticeable thing about the game was the perfect formation observed by the R.A.F. team. It was strongly reminiscent of the Pageant at Hendon last summer. And they kept their formation throughout a most strenuous game. There was not one forward pass among the Air Force side during the game, and not one bad pass given or taken. The three-quarter line worked like a machine, with only the Army tackling to stop the works. This was for quite two-thirds of the game. In the last half-hour the Army showed such amazing form forward that the R.A.F. pack were pushed all over the place. It was during this last half-hour that, in spite of the most gallant defence by the R.A.F. backs, the Army scored their two tries.

The game started with a beautiful exhibition of Rugby Football, according to the rules. The forwards packed down tightly and were about quits till the Air Force heeling gave Sq. Ldr. Russell the ball. Guardsman Powell was on him like a flash, but the ball was away, straight and hard and low, into the hands of Flg. Off. Chambers, who had the R.A.F. formation on the move in a second. Mr. Chambers played a great game. He never faltered, was always in the right place, and in addition to keeping his three-quarter line active, made several brilliant individual openings.

The Army tackling kept things even for a bit. Then some long kicks and sharp sprints by the Army wings forced the R.A.F. onto their own goal line, where there was fought a most desperate battle. Five times the scrimmages were broken up and reformed, but still the Air Force held the line. And each time, at the bottom of the mix-up, thoroughly kicked and battered, but holding the ball, was AC. Casey, the full-back. AC. Casey played even better than he did against the Navy. He fields, kicks, follows-up, and gets back into position, in the most amazing way. And he goes down on the ball in a tight cover in a way which, to the mere spectator, is heroic.

After what seemed hours, in which even the crowd were battering each other with excitement, the Air Force got the ball away and kept it in the Army's twenty-five, until half-time.

In spite of the Army's most valiant efforts, two tries were then scored against them. Both movements were started by the perfect co-operation of the Air Force side, particularly from Russell to Chambers, and from Chambers to Marcy and Lowe, the inside threes. The actual tries were scored by Lowe, whose play has a finish which is all his own. Cpl. Wale failed with both kicks from awkward angles.

In the second half the Army forwards found their game, their feet, and, apparently, their second wind. They more than harassed the Air Force pack, they trampled on them.

A splendid break-away by the Air Force forwards, followed by a dribbling run by Flt. Lt. Chick, eased the situation, but another scrimmage near the centre gave Powell the ball, and some good Army handling, combined with the tremendous speed of their wing three-quarter, Lieut. Bryan, sent Powell over for a try. Their next try was scored two minutes before time, and was the result of a brilliant run by Lt. Bryan. Both kicks failed.—C. M. MCA.

The R.A.F. team was :—

Royal Air Force :—AC. W. Casey (Henlow), back; Cpl. J. M. Wale (Flowerdown), Plt. Off. J. Marcy (Andover), Flt. Lt. C. N. Lowe (Kenley), and Flt. Lt. P. G. Scott (Henlow), three-quarter backs; Flg. Off. P. J. Chambers (Manston) and Sq. Ldr. J. C. Russell (Upavon) (captain), half-backs; Flt. Lt. J. S. Chick (Farnborough), Flt. Lt. E. F. Turner (Uxbridge), Flg. Off. F. W. Sinclair (Henlow), Flg. Off. T. Rose (Duxford), Flg. Off. C. D. Adams (Netheravon), Flg. Off. F. V. Beamish (Old Sarum), Cpl. W. Johnson (Ruislip), and Flg. Off. E. C. Wackett (Uxbridge), forwards.



SAFETY FIRST!—The Army touching down. Flt. Lt. Turner in the foregroun

ROLLS-ROYCE
Aero Engines
THE BEST IN THE WORLD

Some extracts concerning the recent flight of 8,500 miles round Australia from "The Aeroplane" of May 22nd, 1924, entitled

"ON THE AUSTRALIAN TRIUMPH"

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England to Sweden (and back)	2,450 miles
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Across the Atlantic	1,890 miles
England to Finland	1,100 miles
England to Warsaw	1,050 miles
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These flights were accomplished without any change of engines en route

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"SAFETY" FIRST [ALSO RAN—"PROGRESS"].

The article in The Aeroplane of Mar. 11 "On Safety First" deals with a subject of the very first importance. There is no room for doubt as to the extent to which official control of aircraft design in this country has retarded progress, and in regard to the matter of control at low speeds the facts are more condemnatory of Air Ministry policy than can be realised by the majority even of those actively engaged in aircraft design.

Practical attack on the difficulties of control at low speeds began as far back as 1915, when what was known as K section, Air Department, the Admiralty, put before aircraft designers in this country the problem of producing seaplanes of the minimum possible dimensions carrying the maximum possible loads, but yet having landing speeds lower than those of existing machines.

This problem was tackled in earnest by at least two designers. One of them was Mr. C. R. Fairey. The other was the present Technical Editor of this paper, who was then Design Officer at the R.N.A.S. Repair Depôt (afterwards Experimental Construction Department), Isle of Grain. Of the success which has attended Mr. Fairey's efforts, there is no need here to discourse, for it is well known that he has succeeded in producing machines which have not merely a low stalling speed, but which are controllable at stalling speed, and at angles past the stall.

Ancient History.

For the moment the work of the Isle of Grain deserves attention. The Admiralty Technical Department regarded the problem above mentioned as one of developing efficient high-lift wings. The Grain design department having access both to to test figures and to the actual test pilots, realised that the existing machines of the time alighted at speeds at which control had ceased, and these speeds were often 10 or more m.p.h. above the stalling speed of their wing surfaces, and that the use of high-lift wings would lead nowhere unless those wings could be controlled at low speeds.

Their first experimental machine was a conversion of a Sopwith Baby seaplane, which was fitted with new wings. The conversion, however, extended beyond this, for in addition to ailerons of much greater area and of somewhat unusual form, the machine was fitted with a tail-plane, elevators, rudder and fin, of greatly increased area, and of improved section, and of higher aspect ratio than had been used on the original type. In addition, a considerable readjustment of C.G. relative to the wing chord was made.

That machine on test had a minimum flying speed under complete control very much lower than had been hoped.

Two further machines, using the same wing section and considerably higher wing loadings, and fitted with control surfaces of equally adequate size, were constructed at the same establishment during 1916/17.

Low Speed Control Eight Years Ago.

Official test figures for these machines are in the archives of the Air Ministry, and those figures show that control was maintained in these machines down to air speeds at least as low as has been achieved with equal wing-loading to this day. A pilot who stalled one of these machines some 30 to 50 ft. above the water, and descended stalled, but in control, without damage, is still in the service of the Air Ministry.

Over and above these facts it may be recorded that a third machine built at Grain, fitted with the same wing and carrying the same loading, became uncontrollable, and stalled at an air speed of 15 m.p.h. higher than the two above mentioned.

The designer at the time was able to form a clear idea of why this occurred, and wished to make a very simple modification with a view to testing the correctness of his belief. He was not permitted to do so, as the machine was officially regarded as useless.

It is evident in the light of present experience that his opinion was well-founded, and that the alteration which he desired to make would have cured the trouble.

It can be said with certainty that in these machines, built and tested eight years ago, control at low speeds had been secured to an extent which is not present in any but a very small minority of present-day machines, and, further, that the methods used to attain this result were precisely the methods at which the Aeronautical Research Committee and the R.A.E. at Farnborough are now arriving as the result of years of research and the expenditure of large sums of money.

The whole of the data which these establishments have yet published on this subject does no more than confirm the general accuracy of the assumptions which were used to secure these results at Isle of Grain eight years ago.

A Modern Example.

Another and more recent example bears on the possible uses of slotted ailerons as an aid to low-speed control.

In 1923 a light aeroplane was designed and built in which slotted ailerons were employed. This machine was originally fitted with an engine of inadequate power, and with that engine a large number of short flights were made by two pilots of great experience. As a matter of fact that engine never allowed the machine to exceed its stalling speed by more than a mile or two an hour, yet after its first hop, the pilot was so deceived by the complete control available, that he announced his belief that the machine had an ample power reserve. Subsequent tests proved conclusively that the control at low speed was abnormal, that this control extended past the stall, and that the machine was an extremely safe one whereon to indulge in experiments in stalled flight.

Incidentally, the slots were so arranged that it was a matter of half-an-hour's work to remove them, and so to compare slotted with unslotted ailerons with the minimum change in the other features of the machine.

In 1924 this machine was purchased by the Air Ministry, sent to Martlesham, and there burnt, without ever having been flown.

The reason for the deletion was the fact that the machine had been stored for some time and was not in the best of condition, and that, having been fitted with a larger engine than the original, some appreciable vibration occurred in the engine mounting. This could have been put right in a couple of days, at a very small cost.

There are undoubtedly a number of other instances of a somewhat similar nature which could be disinterred were it possible for any one individual or any one organisation to digest and analyse all the data which are in existence as to the behaviour and performance of aeroplanes, and the evidence—even that which can be produced—forms a fairly damning indictment of the policy of the Air Ministry in regard to technical progress during recent years.

Why Time is Wasted.

But it should be pointed out that the fault lies not with any lack of intelligence or lack of a sense of duty on the part of Air Ministry officials or employees.

Take this matter of control at slow speeds. Those members of the Aeronautical Research Committee who are concerned with the problems involved, cannot possibly be expected to have at their fingers' ends the results of all the aeroplane tests that have ever been made. Even if they had, the bearing of performance test records, as they exist, on the actual degree of controllability attained, is not direct, and, short of a very complete analysis of all the recorded figures, together with fairly complete design data for each machine involved, it would be impossible for them to recognise that, say, the machines to which I have referred, showed any notable control characteristics.

In the same way the Air Ministry probably did not know that the light aeroplane above mentioned possessed any unusual degree of controllability at low speeds—they may even have been unaware that it possessed slotted ailerons.

Had they possessed any idea of using it for slow-speed control research, they would not have sent it to Martlesham, and had Martlesham known the facts it probably would not have been burnt. Incidentally it may be mentioned that the designer himself did not know the machine had been sold till after it had been destroyed.

What is wrong with the present state of affairs is the policy of the Air Ministry in attempting to supervise design and experiment. The responsibility lies on the Government of the country and on those who have held the position of Secretary of State for Air.

Ignorance Omnipotent.

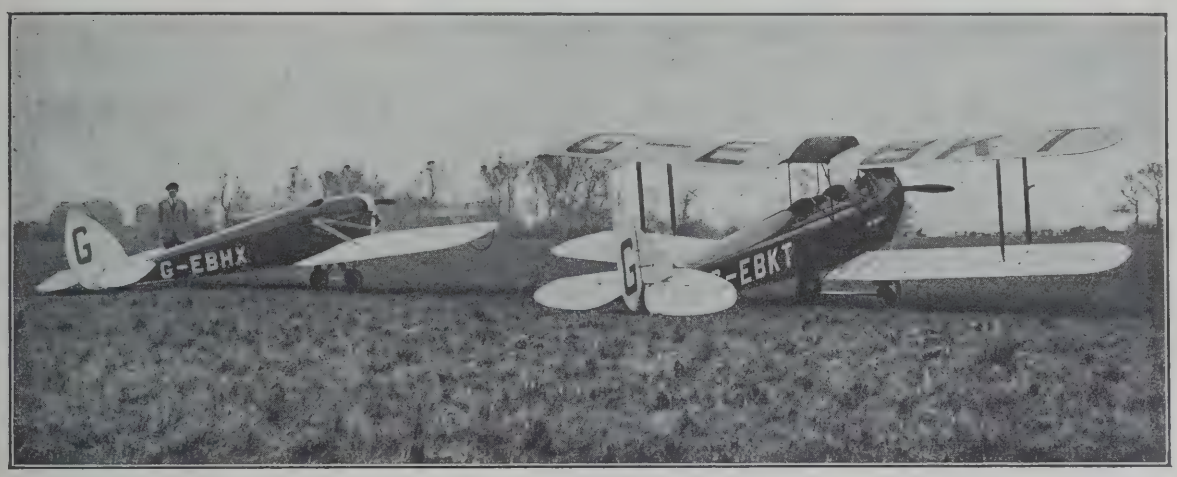
A responsible official dare not recommend the expenditure of public money on an experiment which from his own knowledge and experience he cannot expect to be successful. He will get no credit for the experiment even if it is a success, he will be blamed—from both sides—if it fails. Therefore in self-defence he turns down experiments which pass beyond the limits of his knowledge with very nearly as perfect regularity as he will turn down others which he knows are doomed to failure.

The Air Ministry, as an entity, cannot possess a knowledge of aeronautics which is anything like the sum of all the knowledge possessed by the individuals who compose it. In fact it is probably nearer the truth to say that the collective ignorance of the Air Ministry approximates to the sum of the ignorances of all its constituents. But in regard to approval of designs it acts very nearly as though anything of which it was not quite sure was necessarily incorrect.

To go back to control at slow speeds,—Mr. Fairey's work on this subject originated as above related in 1915. As with the parallel branch of experiment at Grain, his first attempts to produce slow-flying aeroplanes produced extremely promising results. There are no signs to be discovered that his work was officially appreciated at anything like its true value or that the real nature of the problems he had in fact to a large extent solved were even recognised.

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Machines embodying the essential characteristics present in his latest machines have been produced in a continuous series since that date, in the face of unmistakable official doubts as to their real utility and value. Until the Air Ministry's official mind realised that there was a slow-speed control problem, they were quite unable to appreciate that Mr. Fairey had done a great deal towards solving it. When they did realise it, they were naturally not particularly anxious to admit how largely he had forestalled them in this matter.

Mr. Fairey fortunately has been able to continue his experimental work, and after an unnecessarily long delay the real value of his efforts has been publicly realised, if, perhaps, it has not been officially proclaimed.

In the case of the Grain experiments, it has not yet been realised that they have any bearing on this particular problem. The work which was in progress there was terminated at the end of 1917 as a result of a change of policy. The responsible designer was transferred to another sphere of activity, and has since not been able to return to aircraft design work, except as a very minor side-line in his activities.

It should be said that in the choice of examples the writer has referred only to such facts as are within his personal knowledge, and that the work of Mr. Fairey and of the Isle of Grain have been referred to so continuously because they represent first-hand knowledge, untinged by surmise or rumour.—W. H. S.

THE AVRO PASSENGER CARRIER.



The Avro type 563.—The machine illustrated is fitted as an Ambulance and known as the Andover. The passenger carrier is identical except for the interior equipment.

This machine, which may be expected to appear at Croydon at almost any moment now, is the first Avro machine which has been produced specially for air-line service on main routes. It is however by no means an experiment, for it is essentially based on the Avro Andover ambulance machine which has been built for the R.A.F.

The passenger carrier is designed to carry 12 passengers, pilot and navigator and is fitted with a Rolls-Royce Condor III engine of 600 h.p. In general arrangement the machine follows standard practice—it is an equal-winged, three-bay tractor biplane, with a structure of mixed timber and steel.

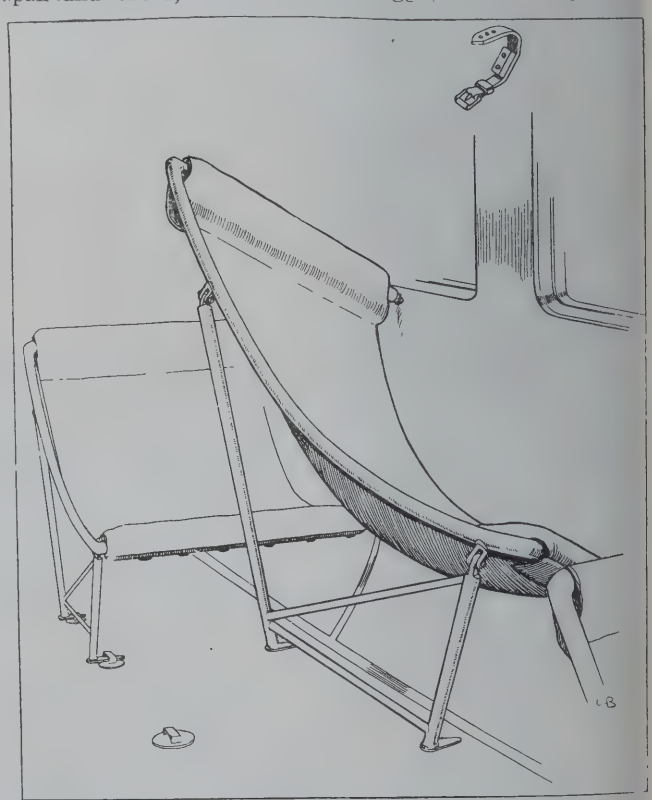
Noticeable features are the very wide track of the undercarriage which is of the split "torpedo-carrying" type with the wheels below the inner pair of interplane struts, the presence of a marked sweep back on the wings, and the oval-section monocoque cabin.

The fuselage is in three sections—a steel tube cantilever structure forming a mounting for the engine, the cabin, and an after-section framed in steel tube, and faired out to conform to the oval of the cabin section. A sketch reproduced shows the engine-mounting, and indicates how the front ball-joint support and the rear swinging link of the Condor are attached, and also the method of carrying the underslung radiator from the engine bearers. The radiator is supported at eight points, giving a very rigid though light attachment and securing freedom from vibration.

The cabin section of the body is three-ply covered on box-section rings, and has a second internal skin of three-ply separated from the outer by an air space. This provides an excellent insulation of the cabin against both temperature variations of the outside air and against noise. Pilot and navigator are seated side by side immediately behind the fire-proof bulkhead which forms the front end of this section of the body. There is a second bulkhead between these seats and the cabin proper, fitted with a door giving access to the crew space.

The cabin proper is 22 ft. long, 4 ft. 9 in. wide, and has 6 ft. clear headroom. The cubic capacity is 616 cubic ft., giving over 50 cubic ft. of air space per passenger with full seats. Seats are arranged in six rows of two each side by side with a central gangway. Openable windows extend over the full length of this cabin, and adequate methods of ventilation and heating are provided. The lavatory is at the back end of the cabin and a separate luggage compartment, of ample capacity, occupies the remaining length of the cabin structure.

The construction of the back end of the fuselage, which is of steel tube wire-braced, is shown in another sketch, as is the very ample tail-skid. This latter sketch also indicates a little fitting of considerable importance, in the shape of a pair of sockets, one ahead of, and one behind the, tail-skid stays, into which a steel tube may be inserted for handling the machine on the ground—thus avoiding risk of damage from an attempt to lift the fuselage in the wrong place. The wings are of normal timber construction, are of equal span and chord, and devoid of stagger. As already men-



How the Andover Ambulance seats are folded to leave room for stretcher cases.

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(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.

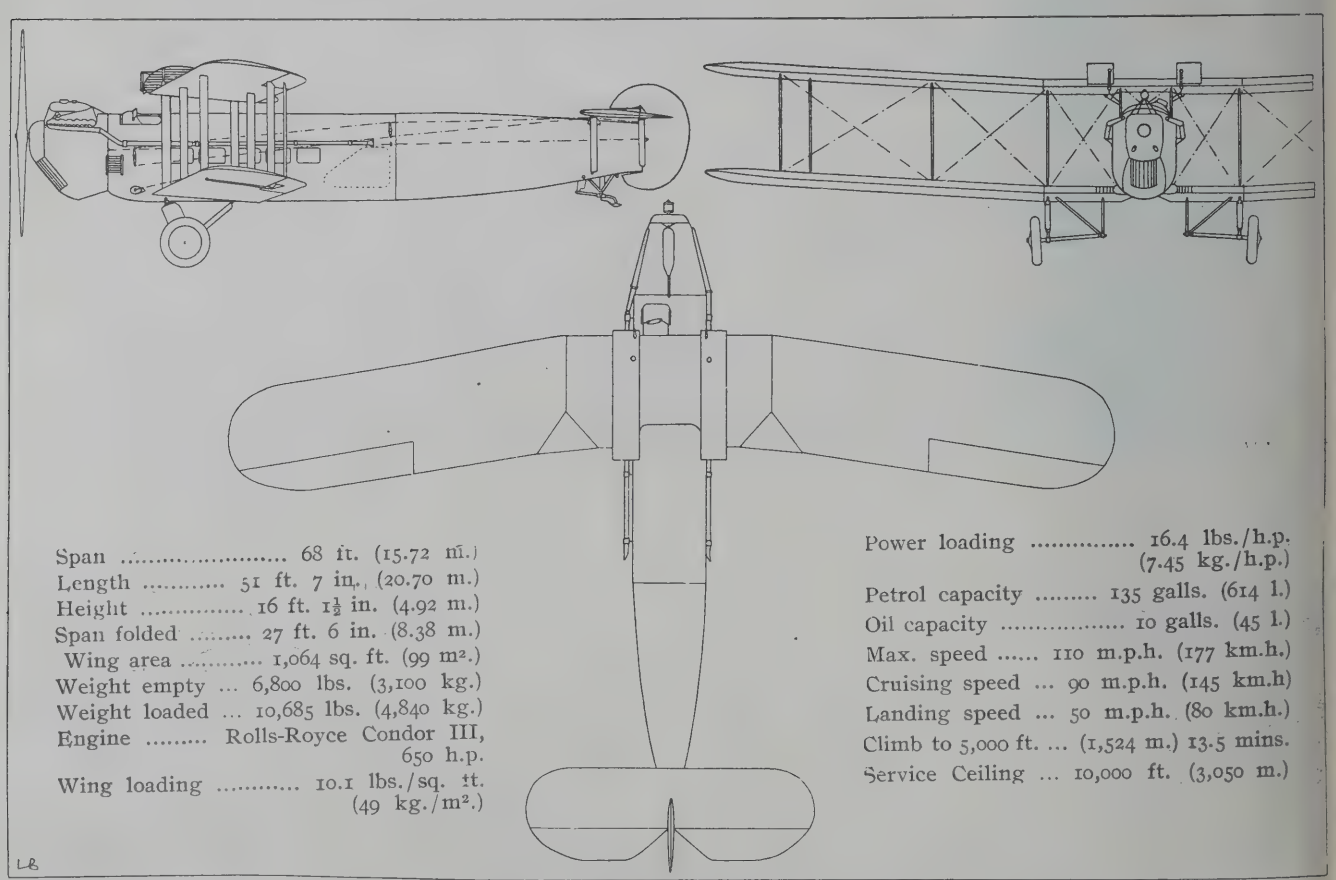


The nose of the Avro 563 (Rolls-Royce Condor III). Interesting points are the visible gauges on the fuel tanks, shutters on the underslung radiators pivoted along fore and aft axes instead of across the body, the oil-cooler at the side of the body and the divided undercarriage. The size of the machine may be gauged from the apparently dwarf humans at the wing tip.

tioned, they sweep back markedly from the inner interplane struts to the tip, and in addition they are arranged to fold from the point at which sweep-back commences.

The undercarriage consists of two separate units, one on each side. A fixed Vee of steel tubes is attached below the bottom wing close into the fuselage, and an axle is hinged to the base of this Vee and supported by a second deformable Vee attached below the inner interplane struts. This second Vee has a front telescopic leg and a hinged rear leg.

Twin gravity fuel tanks are mounted above the top plane and are fitted with gauge-glasses, visible from the pilot's seat, which give an ample gravity head to the carburettors. The engine is fitted with long multiple-perforated exhaust pipes of the R.A.E. pattern, which serve as effective silencers.



Span	68 ft. (15.72 m.)
Length	51 ft. 7 in. (20.70 m.)
Height	16 ft. 1½ in. (4.92 m.)
Span folded	27 ft. 6 in. (8.38 m.)
Wing area	1,064 sq. ft. (99 m²)
Weight empty	6,800 lbs. (3,100 kg.)
Weight loaded	10,685 lbs. (4,840 kg.)
Engine	Rolls-Royce Condor III, 650 h.p.
Wing loading	10.1 lbs./sq. ft. (49 kg./m²)
Power loading	16.4 lbs./h.p. (7.45 kg./h.p.)
Petrol capacity	135 galls. (614 l.)
Oil capacity	10 galls. (45 l.)
Max. speed	110 m.p.h. (177 km.h.)
Cruising speed	90 m.p.h. (145 km.h)
Landing speed	50 m.p.h. (80 km.h.)
Climb to 5,000 ft.	(1,524 m.) 13.5 mins.
Service Ceiling	10,000 ft. (3,050 m.)

G.A. of the Avro 563 passenger carrier.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 10; Wednesday, 1; Thursday, 6; Friday, 11; Saturday, 12; Sunday, 4.

Imperial Airways, Ltd.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 33, passengers 75, freight 6 tons.

Air Union:

Paris—London: Machines 12, passengers 31, freight 7½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 10, passengers 20.

Deutscher Aero Lloyd:

Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 33, carrying 75 passengers. Foreign machines: 22, carrying 51 passengers.

Comparative Figures:

For week ending Mar. 15:

Machines, 55; Passengers, 126; Crews, 67; Total personnel, 193.

Corresponding week, 1924:

Machines, 114, Passengers, 259; Crews, 194; Total personnel, 453.

Corresponding week, 1923:

Machines, 67; Passengers, 207; Crews, 126; Total personnel, 333.

Corresponding week, 1922:

Machines, 53; Passengers, 113; Crews, 88; Total personnel, 201.

Corresponding week, 1921:

Machines, 35; Passengers, 92; Crews, 43; Total personnel, 135.

Croydon Notes.

There has been little to chronicle at Croydon during the past week. Though the weather has been fairly good at the aerodrome, there have been various snow and other storms on the Continent, evidently arranged for the reception of Sir Sefton Brancker and Mr. Alan Cobham.

Everybody is pleased at the success of the India and back journey. No doubt in due course we shall be favoured with a list of component parts and accessories and proprietary articles which contributed more or less to that success. So far one has only heard a rumour that Sir Sefton used the same monocle throughout the trip and that beyond a daily polishing and inspection it required no attention whatever.

Last week one alluded to a flight by Mr. Olley and the Vimy and stated that they were both still going strong. Evidently the paragraph set going some form of psychological momentum for the pair got entangled in a snowstorm on the way back from Basel, which somewhat deterred Mr. Olley and deteriorated the Vimy. One is told that the damage is a broken lower plane and broken airscrew. But the Vimy easily survives that sort of thing.

It is hoped that an interesting demonstration will be staged at Croydon in the near future if arrangements can be made. Mr. Anthony Fokker, it is expected, will bring over the latest type of Napier-engined F.VII in order to demonstrate that certain "Safety First" principles which have long been advocated in this paper and ridiculed out of it, have been incorporated. Further details will be announced later.

By the way the Editor's pet non-diving, landing-at-no-miles-per-hour terrific-top-speed machine has been produced at last and flown—by Douglas Fairbanks in the "Thief of Baghdad." It is called a magic carpet and certainly seems to be an excellent vehicle, though one did see a certain tendency to spin on occasion.—G. D.

Mr. Cobham on the Himalayas.

The following letter from Mr. Alan Cobham, written from Delhi before starting for home is of historical as well as personal interest:—

I forget whether I told you in my last letter about our little flight up to the Himalayas. Of course you have heard about it in the press, etc., but the facts were briefly these. General Brancker, who was in hospital at Calcutta, wished me to fly up to Darjeeling or as near as possible and find out the possibilities of an air route to the hill station, and I thought that while I was so near it would be a good stunt to endeavour to get a few "close ups" of Everest and Kinchinjunga.

Unfortunately, all the pictures were over-exposed. It appears that it needs a man of local experience to get Himalaya snow pictures. Another time I should know what was wanted.

However, we had to keep the ball rolling and we got the D.H.50 up to 16,700 on the altimeter and according to the authorities out here that is equivalent to at least 19,000 at home. Of course there was very little to the stunt except that it was extremely dangerous to get on the leeward side of any mountain and into its down-currents. Had the engine failed we should simply have been for it. I don't think we could have made a respectable crash.

I am convinced that a very valuable survey could be made of oblique photos of the Himalayas with a machine that would do 30,000 feet.

I think the 50's performance to date, also the Puma's, is very remarkable and my one aim is to endeavour to make the whole trip appear as simple as possible and arrive home in exactly the same condition, as far as appearances go, as we started. Of course this flight is not to prove that we can fly, but is purely a commercial flight in which an aeroplane is used because it is the best means of transport to do the job.

Our flight to Rangoon was quite successful. The take-off, with 1,350 lbs. load on the 50 with only 230 h.p., being near the tropics and in the heat of the day on a 550 yards' run with no wind, from the racecourse (new one) at Rangoon, though a very creditable performance to the machine, was not one that I wished to make a habit of! You see all my take-offs out here are equivalent to taking-off at about 2,500 ft. at home.

I met Kemp in Rangoon and he seems to be on a very sound proposition. I think that the best air-line to start with in India would be Calcutta-Rangoon. There one can really beat the existing modes of transport by doing the trip in one day against three days and nights by boat. And if a really reliable service were established it would gain public confidence for all the rest of aviation in India.

I really must mention the extraordinarily fine way in which we have been treated in India by the R.A.F., Military and Civil Authorities. In all my correspondence, telegrams and general arrangements for arrivals and departures and general assistance I have received such prompt and business-like attention with every courtesy and kindness. Nothing seemed too much trouble for anyone, and the curious part about it is they all seemed so surprised at our ordinarily polite attitude. [One wonders what other people on previous flights have done that politeness should be regarded as unusual. One imagined that the day was long past when an aviator regarded himself as a popular hero and expected people to put themselves out for him.—Ed.]

We have just flown from Calcutta via Benares and Jhansi to Delhi and Sir Sefton has been having his final talks with the Government. He will do a little tour by train and R.A.F. machine of the N.W. Frontier and rejoin me at Karachi where I fly to-morrow to give the 'bus a top overhaul for the homeward run.

We have done about 130 hours' flying in our various wanderings and in order to get home we shall have to do in all about 220 hours.

The trouble about this flight is that there are so many people watching. It is so easy to make a slip and the slightest trouble one has everyone will know about it and will remember the flight not by the good work done, but by the trouble one had.

Banquet to Sir Sefton Brancker and Mr. Cobham

The Royal Aero Club and the Society of British Aircraft Constructors will entertain Air Vice-Marshal Sir Sefton Brancker and Mr. Alan J. Cobham at a banquet at the Savoy Hotel on Monday, 23rd instant, at 7.30 p.m. Tickets, £1 1s. each, may be obtained from the Secretary, Royal Aero Club, 3, Clifford Street, London, W.1.

[Members are reminded that there is an excellent ballroom at the Savoy and it is the custom after the banquet to migrate thither without extra cost. This extra inducement should be the extra straw which finally may decide the less serious-minded to attend this function.]

The Royal Aero Club.

The following members of the Royal Aero Club have been nominated for election on the Committee:—

Lieut.-Col. M. Ormonde Darby, O.B.E., Lieut.-Col. John D. Dunville, C.B.E., Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., Wing. Cdr. T. O'B. Hubbard, M.C., A.F.C., Lieut.-Col. F. K. McClean, A.F.C., Mr. W. O. Manning, Lieut.-Col. Alec Ogilvie, C.B.E., Mr. F. Handley Page, C.B.E., Major Sydney V. Sippé, D.S.O., Mr. T. O. M. Sopwith, C.B.E., Capt. Charles B. Wilson, M.C.

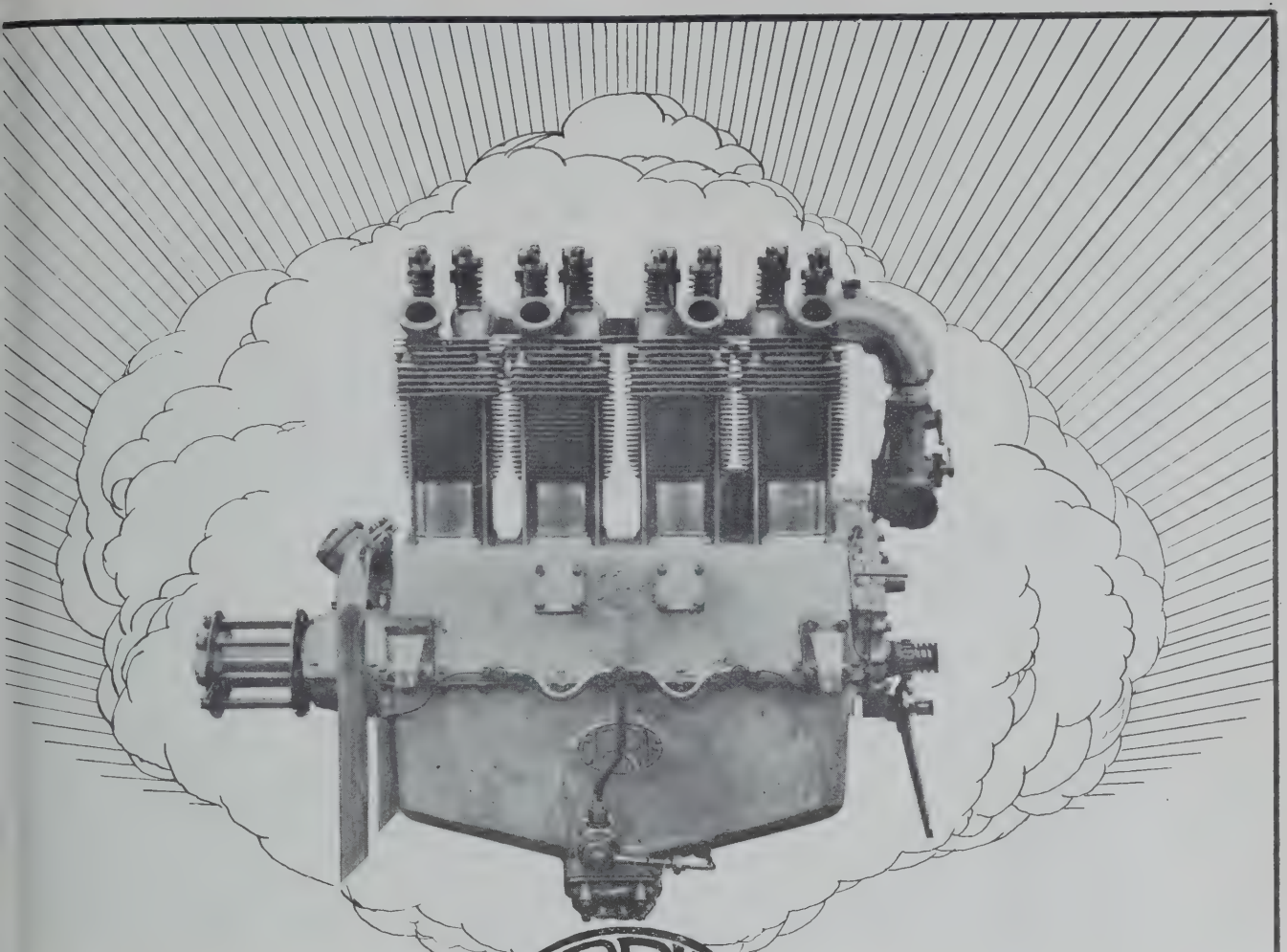
Ballot Papers must be received by the Secretary not later than 12 noon on Tuesday, Mar. 24, 1925.

Aeronautics at Cambridge.

On Friday, Mar. 13, the Cambridge University Engineering Department held a Conversazione in the Engineering Laboratories which was notable for the fact that for the first time on record aeronautics was recognised as a reputable branch of engineering. The Cambridge University Aeronautical Society had organised the air exhibits and made a remarkably good little show which caused quite a large amount of interest among the orthodox engineers. Flt. Lt. F. L. Howard-Williams, R.A.F., President of the Cambridge Aeronautical Society, and Sq. Ldr. J. A. G. de Courcy, who is engaged on engine research at the University, were responsible for the arrangement.

Mr. Williams had succeeded in borrowing from the de Havilland Company a D.H.60, one of the new light aeroplanes known as the Moth, with an A.D.C. Cirrus engine. He had also borrowed a Gloucestershire Grebe with a Jaguar engine and so complete aeroplanes were represented by two of our latest types. Professor Melville Jones, Mond Professor of Aeronautics at Cambridge, had arranged an excellent series of air photographs, including a photographic survey of the

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27/60 h.p. "CIRRUS."

BRIEF SPECIFICATION:

BORE	105 m/m.	STROKE	130 m/m.
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whole district round Cambridge. There was also a Le Rhône rotary engine and a number of models of various types.

From the opening of the Conversazione till the close the aeronautical exhibits seemed to attract more attention than almost anything else. Among the distinguished visitors were Air Vice-Marshal Sir Geoffrey Salmond, Air Member for Supply and Research, and Sir Geoffrey Butler, Member of Parliament for Cambridge University, who has shown very practical interest in air affairs in the House of Commons.

A Real Sky Pilot.

The accompanying photographs are of the Rev. W. A. Haslam, who served as a flying officer in the war and who is now Vicar of St. Agnes Parish, Southampton, with his car and scoring board with which he is now touring the country. He is trying to collect 9,999,999 pennies or just over £40,000 in order to build at Southampton a representative church such as other ports of any size have already got.

Mr. Haslam is assisted by Major Buck, who was also a flying officer during the war, and when they visited The Aeroplane office during the week the score board registered 70,000 pennies collected.

To avoid unauthorised collection, contributions in stamps, postal-orders, notes or cheques payable to the Southampton Penny Church Fund, may be sent direct to The Manager, National Provincial and Union Bank of England, 291b, Oxford Street, W.1, or The Rev. W. A. Haslam, St. Agnes Vicarage, Southampton, and will be duly signalled up on the Scoring Board which can be seen in London.

The small photograph shows Mr. Haslam standing beside the Avro on which he learned to fly.



A German Year Book.

Those who understand German will doubtless obtain useful information from the *Jahrbuch fur Luftverkehr* for 1924 published by Richard Pflaum Verlag A. G., München. This book is in fact a general review of the air-line work of the World. The maps give a very good idea of the air lines which are actually running, though in fact they are a trifle optimistic in that they show lines which are very intermittent in operation. A very useful list of European aerodromes occupies some forty pages of the book.

There is a long article on the political economy of air lines. And there is a long article which professes to deal with modern air-line machines which, though including German and Dutch machines and one type of French machine, omits all English machines despite the fact that English machines cover by far the greatest mileage in the

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World on air-line work. Therefore one is disposed to say that while the book contains much valuable information it must not be regarded as an absolutely reliable authority.—C. G. G.

"——K.L.G. were used."

The following cablegram was received by the Robin Hood Engineering Works, Ltd., from Mr. Alan J. Cobham on Mar. 7 :—

"Nearing finish 17,000-mile flight survey through Iraq, India, to Rangoon and back. Throughout flight done with same De Havilland Type Fifty aeroplane with Siddeley Engine we have used same two sets 'K.L.G.' Plugs, and during rain or heat plug trouble has been unknown to us. Certainly I can ask for no better plug.—Alan Cobham."

Art and Aeroplanes.

When *The Aeroplane Album of British Aircraft* appeared one was justified in claiming that it was the finest example of printing ever produced in connection with aircraft. It was the first time aircraft had been illustrated in photogravure and it certainly surpassed anything that had been produced before. One must now admit frankly that it has been beaten by the album which has been issued by D. Napier and Son Ltd. to illustrate the various aircraft in which Napier aero-engines are used.

Essentially of course the Napier Album is an advertisement for Napier engines but it is a great deal more than a mere description of the engines and of their achievements. It is in fact a book illustrating the most up-to-date productions of British Aircraft Constructors and the fact that it is possible to illustrate so many different types of aeroplanes demonstrates most conclusively the popularity of the Napier engine.

Primarily the album has been produced for presentation to the High Authorities of those foreign nations which aspire to an air fleet. And it is of interest to learn that His Majesty the King has been pleased to accept the first copy.

The reading matter which accompanies each picture is printed in English, French and Spanish so that it may be understood in practically every part of the World. This reading matter is printed on transparent paper which acts as a guard and guide to the illustrations.

The pictures themselves are printed in photogravure on heavy plate-sunk paper such as is used in the art business for the best quality of engravings, and the printers, Messrs. Palethorpe and Cond, of Birmingham, deserve to be congratulated on the results which they have achieved.

The only criticism which one can make so far as the pictures are concerned is to remark that horizons are generally horizontal. One or two excellent pictures are spoiled because the photographs have been trimmed to the lines of the aeroplanes instead of to the country or buildings which form the background. But this does not alter the fact that the whole publication is far in front of anything that has so far been seen in connection with aircraft.

The album is bound in a very attractive form and on the cover is a particularly live example of Mr. Leonard Bridgman's art, showing an entirely imaginary single-seat fighter, naturally with a Napier engine.

The pictures include aeroplanes built by the following firms :—A. V. Roe and Co. Ltd., The Blackburn Aeroplane Co. Ltd., Handley Page Ltd., The Fairey Aviation Co. Ltd., The Supermarine Aviation Works, Vickers Ltd., The English Electric Co. Ltd., Boulton and Paul Ltd., George Parnall and Company, Armstrong-Whitworth Aircraft Ltd., The de Havilland Aircraft Co. Ltd., The Gloucestershire Aircraft Co. Ltd., The Military Aircraft Works at Prague, and The Dutch Aircraft Manufacturing Works (Fokker) Ltd.

It is obvious that such a publication cannot be made a free issue to everybody concerned with aviation, so a certain limited number of copies are on sale at the price of a guinea each. As the book contains 25 plates such as art dealers would sell for at least half-a-guinea apiece, the album is cheap to anybody who is so keen on aviation as to wish to possess a collection of the most modern aeronautical prints.

Copies may be obtained from D. Napier and Son Ltd., 14, New Burlington Street, London, W.1.

PERSONAL NOTICES.

BIRTHS.

CLAPPEN.—On Mar. 8, at St. Faith's, Ealing, to Kathleen, the wife of Flt. Lt. D. W. Clappen, R.A.F.—a son.

GUILFOYLE.—On Mar. 10, at The White Bungalow, Birchington, Thanet, to Mary, wife of Sq. Ldr. W. J. Y. Guilfoyle, O.B.E., M.C., No. 9 (Bombing) Sqdn., R.A.F.—a son.

SCOTT-PAINE.—On Mar. 11, at The Cliff, Weston, near Southampton, to Brenda, wife of Hubert Scott-Paine—a son.

SHEPPERD.—On Mar. 13, at 3, Kingston Terrace, Sleaford, Lincs, to Olive, wife of Capt. H. E. Shepperd, late R.F.C., and R.A.F.—a son.

DEATHS.

EARNSHAW.—On Mar. 24, at Hong-kong, the result of a parachute accident, Reginald, the younger son of Frederick William and Eleanor Mabel Earnshaw, of Pomona, Swanley, Kent, aged 24.

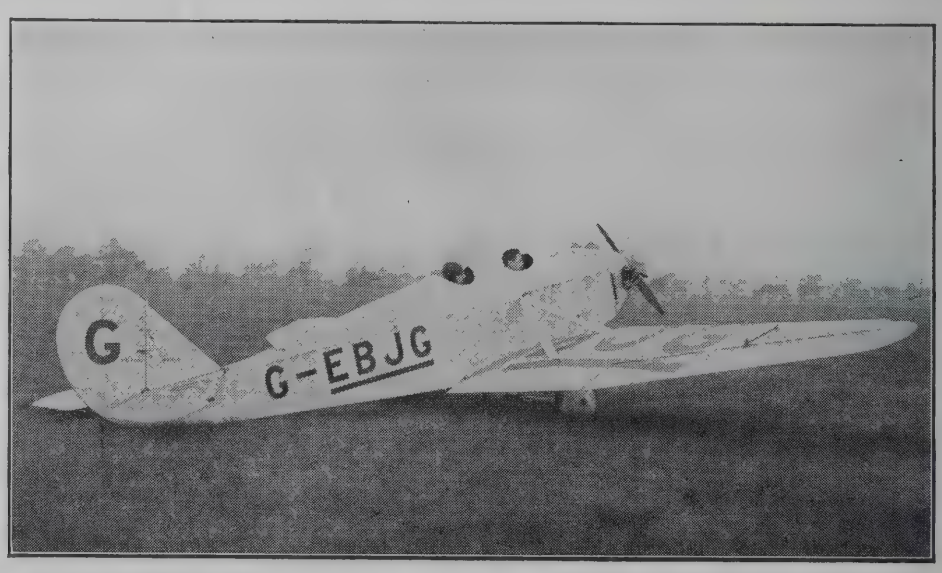
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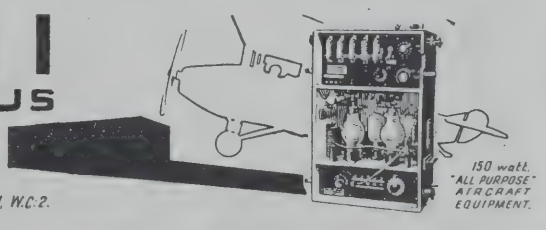
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THE PILGRIMS' RETURN:—Sir Sefton Brancker, Mr. Alan Cobham and Mr. Elliott landing at Croydon on the De Havilland 50 (Siddeley Puma engine) on their return from India on March 17.

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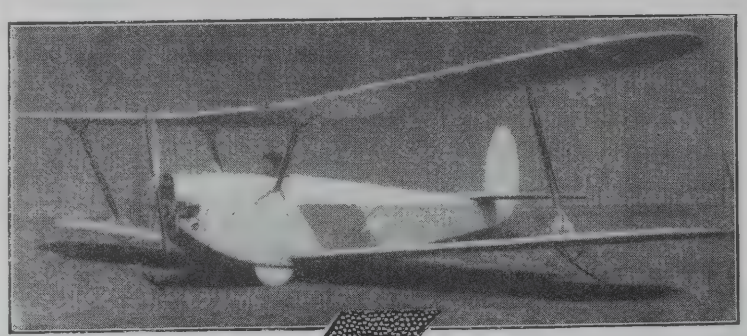
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ON ENGINEERS IN THE R.A.F.

One of the most important subjects raised in the Debate on the Air Estimates was that of the need for a proper engineering branch in the Royal Air Force. As is fairly well known at present the general policy of the Air Council is to make every officer of the R.A.F. both a pilot and an engineer, up to a point. Apparently the Air Council recognises the fact that a man may be a very good pilot and a very bad engineer or a very bad administrator or a very bad staff officer, and likewise that a man may be a very good engineer and a very bad pilot or staff officer or administrator. But the principle has been laid down that before he can become anything else an R.A.F. officer must be able to fly and must be able to handle a spanner, after a fashion.

When once he has passed a certain comparatively low standard of efficiency in these two arts, sciences, or whatever they may be, he can then specialise on any one of a dozen or more subjects, such as navigation, armament, administration and so forth, and engineering is one of these subjects. But one would like to state most emphatically that an R.A.F. officer who has done an engineering "course" whether at an R.A.F. establishment or at a university (major or minor) is not necessarily an engineer.

One remembers that a great many years ago one of the American comic paper published a series of small cartoons under the heading "Newspapers And Their Readers." One of these showed a funny little man holding in his right hand a heavy hammer and contemplating mournfully a badly-bent nail in a wall while he sucked an obviously damaged left thumb. The paper to which this reader was attributed was *The Scientific American*. A similar picture might justifiably be used to illustrate an officer of the R.A.F., or any other Service, who has qualified as an engineer by doing a course.

Lessons from our Elders.

On this subject there is much to be learned from the Senior Services. In the Army the engineer officer is trained as an engineer from the beginning. He goes to Woolwich, where he learns just enough on the square to avoid clubbing his company on parade. But as a rule he learns very little else about ordinary regimental work and practically nothing about the ordinary strategy and tactics of the Army, unless he makes it a hobby in his spare time.

It may be true of R.E. colonels, as Mr. Kipling says, that they are "Methodist, married or mad" and it is true that the Sappers occasionally do queer things such as building sub-tropical barracks with verandahs in Tipperary and building stone-walled steel-shuttered loop-holed barracks in Hong Kong because the architectural plans went to the wrong addresses. But the fact remains that the Sapper officer is a practical engineer and does engineering jobs in the field which no officer of the line could attempt or even imagine. And the R.E. mechanic is as a rule about as good a craftsman as one could wish to meet.

So far as one has heard there is no idea in the Army of giving every infantry officer a course in practical mechanics so that His Majesty's Corps of Royal Engineers may be abolished. Nor for the matter of that has one heard that the Royal Army Veterinary Corps is to be abolished because every cavalry officer is to do a veterinary course in the future.

The cavalry officer must be able to ride and he ought to know when his horse has got a pain in its stomach, very much as a flying officer ought to be able to fly properly and know when his engine is feeling sick. But there is no need for the one to be a mechanic or the other to be a vet.

The Navy's Experience.

Possibly a still more valuable lesson may be learned from the Royal Navy. In the very early days of steam, when engines were merely auxiliaries to sails in wooden ships, the engineer was not an officer, he was merely a despised and condemned mechanic in dirty clothes to whom the gold-laced executive officers referred as "an adjectived lubricator." When in course of time it became evident that the engines were in fact the most important part of a ship and needed the undivided attention of highly-trained personnel the Engineer Officer was invented and was put into a uniform similar to that of the other officers of the ship, bearing the same number of stripes according to his rank but without the executive curl or loop in the gold lace on his cuff.

Engineer Officers, like Executive Officers, were caught comparatively young and went to Keyham College at Devonport instead of to Dartmouth. There they were given a very thorough training as engineers, with the result that when they came out of Keyham, although they knew precious little about ships and nothing about navigation and though they had no executive command even over the engineer and stoker ratings, they did at any rate know everything that there was to know about steam engines and in due time about electrical gadgets.

The result was that the naval engineer was not only a first-class steam engineer, but, working as he did under all the difficulties incidental to doing anything in the Navy, he became a first-class contriver and was able to overcome almost any mechanical obstacle. It was, for example, the engineer staff which contrived the gun-carriages which made possible the use of naval 4.7 guns in the defence of Ladysmith during the Boer War, although as usual the executive staff took the credit.

As time went on the Engineer Officers, R.N., finding themselves in the main better educated and of more active mind than the watch-keeping officers, agitated mildly for the betterment of their position and as a result the Admiralty magnanimously granted them the executive curl on their cuff with an almost indistinguishable purple patch in the middle to differentiate them from the watch-keepers, and gave them certain limited executive powers over the engine-room and stokehold ratings. And the engineer, R.N., still remained a first-class engineer.

Then some bright person at the Admiralty thought of the idea of training all officers alike at Osborne College, giving each officer after a certain period the choice whether he would become a watch-keeper or an engineer or some other form of specialist. And Keyham College, the home of all real naval engineering, was closed.

What happened then was that the young officers at Osborne discovering that the purple patch, despite the executive curl, still marked the engineer officer as being inferior to those who, to quote Mr. Kipling again, "persecute their vocation on the 'igh and lorfty bridge," simply refused to become engineers. So then the Admiralty having lost several annual generations of real engineers from Keyham had to induce Lieutenants R.N. to take an engineering course and become Lieutenants (E) instead of Engineer-Lieutenants.

The Lieut. (E).

The result is that to-day if one meets any of the real naval engineers one finds them growing grey-haired and bald-headed because of the extraordinary doings of the Lieutenants (E) who are supposed to be their assistants.

The old engineer officers, like all true engineers, put their work before everything else. If there was a job of work to be done in the engine-room that job was done regardless of time and circumstances. The engineer officer and his men were prepared to work day and night till their beloved piece of machinery again performed its proper function. The Lieutenant (E) on the other hand, apart from not having enough genuine engineering knowledge to know how the job ought to be done, is disposed to regard himself as in every way entitled to the privileges of the watch-keeper.

Some years ago, before the War 1914-18, *Punch* published a picture of a naval rating appearing before the Commander of a ship and in the letterpress the Master-at-Arms, replying to the Commander's question as to the charge against the man, replies,—"Well, Sir, 'e overstays his leave, 'e comes aboard drunk, and 'e uses 'orrible language. In fact he behaves just like a bloomin' orfficer."

The real naval engineer might paraphrase that remark and say of the Lieutenant (E) that "He goes ashore when he thinks he will, he fancies himself a necessity to the local social whirl, he talks like a longshoreman. In fact he behaves just like a bloomin' executive officer." And that let

it be said is not the doctrine of engineering, one and indivisible, according to the trained engineer.

One believes that the Admiralty has discovered its mistake and that Keyham College has been reopened with the idea of again producing the genuine engineer for the Navy. But in the six sad years or thereabouts since the Armistice the engine-rooms of His Majesty's ships have lost very nearly all the engineering ability which made it possible to get the utmost power out of the engines and the utmost reliability under almost impossible conditions.

Any of the old and experienced engineers of the Fleet will, with a little encouragement, expatiate for hours on the hopelessness of trying to run any warship to-day at the speeds and over the distances which those same ships were able to do before the Lieutenant (E) came into existence.

The R.A.F. Policy.

Now it is precisely the Lieutenant (E) which the present policy of the Air Council is likely to produce. Possibly the flying officer who has done an engineering course may be competent to judge whether the engines of a flight or even of a squadron in the field are running properly or not. But he is not competent to give a considered opinion as to the design, construction and material of the machine or its engine. Still less is such an officer likely to be able to take charge of or to organise the vast aircraft parks, depots and repair shops such as will be necessary to the enormous Air Force which will have to be used in the next war.

Those who remember the jobs of work which were done at St. Omer, Candas and Pont de l'Arche during the War 1914-18 will remember that although these great stations were commanded by R.F.C. officers, and on the whole extraordinarily well commanded, the actual shops were run by civilian engineers in uniform. Even then they were organised, of necessity, in a makeshift kind of way and because of the mixture of service and civilian personnel their whole method was amateurish.

If the R.F.C. in those days had had a number of Sapper officers who had specialised particularly on aircraft work all those establishments could have been run very much more efficiently. The R.N.A.S. got a much better quality of work done on a smaller scale thanks to the few Engineer-Lieuts., R.N., in that branch.

It is true that the output of the R.F.C. shops was enormous but it was produced very largely by the sheer goodwill and enthusiasm of the personnel of all ranks. It certainly was not produced by engineering knowledge and efficient organisation.

It is fairly obvious therefore that if the squadrons of the R.A.F. in the next war are to be adequately served by the supply depots and workshops behind the aerodrome line those shops ought to be controlled by specially trained engineers of the R.A.F. with just sufficient flying experience to let them understand thoroughly the needs of the men who fly.

Moreover there is a crying need at the Air Ministry itself for properly trained engineer officers to take charge of the technical work at the Ministry. At the present stage of development nearly all aircraft design and aero-engine design is still so amazingly amateurish from the point of view of the trained engineer that infantry officers and watch-keeping naval officers who have served for eight or nine or ten years in the Flying Services probably knows quite enough to compete with such engineering knowledge as is possessed by the so-called aeronautical engineers of the Aircraft Industry—for, with a few notable exceptions, the aeronautical engineers themselves are only amateurs compared with mechanical, civil and electrical engineers in other industries.

And even those few exceptions owe their pre-eminence to congenital genius rather than to actual training, for the very good reason that all aeronautical engineering is either solid rule of thumb experience, pure experiment, or mathematical guess-work. Even the most enthusiastic of aeronautical engineers will hardly claim that absolute knowledge exists in any branch of aeronautical engineering.

But the time will come when Aeronautical Engineering will be quite as much one of the exact sciences as is any other branch of engineering, and the Air Council will be well advised to take steps to train its own engineers in readiness for the time when such science is attained.

The late Artemus Ward in one of his writings remarked, "Some fleas is good for a dog. They keep him from brooding on the fact that he is a dog." Similarly one might say that some flying is good for an engineer in that it may keep him from brooding on the fact that he is an engineer. In fact one would even go further and say that all the funny little civilian experts in the Air Ministry who call themselves aeronautical engineers ought to be made to fly regularly just to blow out of their heads any idea that they are engineers—and, incidentally, in the hope that some of them might be killed in the process.

But it is a very great mistake to imagine that a supply of Royal Air Force engineers can be evolved by taking the average flying officer and putting him through an engineering course.—C. G. G.

THE SECOND AIR DEBATE. (*Continued*).

(Hereafter is the conclusion of the Debate on the Air Estimates which took place in the House of Commons on Mar. 12.)

Captain Reid, speaking as "a miserable pilot," said that we ought to have had parachutes a long time ago. They used to see German airmen leaving their burning machines in comparative safety because they were supplied with parachutes and used to see our own people go to earth in flames. They resented it not because they minded an individual German life being saved but because their friends did not have the same opportunity.

He and one or two others had made somewhat violent representations on the subject but the only result was that they very nearly got into serious trouble. If they had been supplied with parachutes it would have increased the moral of the pilots fifty per cent. [Which is precisely what The Aeroplane said during the War and has been saying at intervals ever since.]

Thereafter Capt. Reid [who seems, unfortunately, to be now somewhat out of date in his ideas of flying] proceeded to prove to his own satisfaction that no scientific research could prevent spinning and nose-diving and that a spin was easy to get out of provided the pilot kept his head.

He complained that only two per cent. of the money in the Estimates had been allotted to Civil Aviation. He suggested that without worrying about the numerical superiority of the French we should concentrate our finances on experimental work and then begin to make up our numerical inferiority with perfected machines.

[This sounds a very pretty argument until one realises that we are not likely to arrive at perfected aeroplanes within the next hundred years, at any rate one hopes not, and we shall certainly not reach an aeroplane which is fit to standardise except under the necessity of war for at least another 25 years.]

He also committed himself to the statement that bombing aeroplanes could wipe out London and that if such a thing happened the war would be over within an hour because all our communications would be destroyed and the whole country would be in a state of chaos. [One believes that there are cross-country railways and transverse roads for communication and that wireless might conceivably take the place of destroyed telegraph and telephone wires.]

Mr. Morgan Jones quoted the Geddes Report as saying that the number of squadrons in the R.A.F. could be reduced because "no great war need be anticipated for at least ten years." [Presumably the Geddes Report meant "expected." In any case one disagrees from the Geddes Report. A great war *may* be expected within ten years and it is our duty to anticipate it by being ready in time.]

Continuing, Mr. Jones said that the increase in the R.A.F. was a grave menace to World peace and mentioned that there were plenty of preparations for war on all sides before the Great War broke out. [One would merely like to ask Mr. Jones what would have happened if our wonderful British Expeditionary Force had not been prepared for war?]

Colonel Crookshank, who remarked that he had taken up ballooning in 1906 at Farnborough, said that the great thing was to have an efficient flying service. The Army could claim to have started the Air Force which began in the Royal Engineers. He related how the first Army airship, the *Nulli Secundus*, was built out of the savings from the £500 a year which was allowed to the Balloon Factory for experimental work and that when the ship flew to London and back Colonel Capper and the late Mr. Cody were "told off" by the War Office for advertising.

Referring to the War 1914-18 Colonel Crookshank said that he had served in the anti-aircraft defences and that they should be co-ordinated more closely with the Flying Services. It was a great advantage for the gunners to know something about flying. He hoped that the result of this debate would be to retain the Air Force as such and to enable the other forces to realise that their best interests were served by having a sound Air Force which could be placed at their disposal immediately for any particular operation. [A very sound piece of advice from an experienced soldier.]

Mr. Wells asked whether the airship shed at Cardington was being enlarged sufficiently to take the largest airship which is to be laid down shortly. He also asked what was to be done about building mooring masts of the type introduced through the Press recently by Commander Burney.

Colonel Day said that we were fast falling behind in the encouragement of Civil Aviation. He would not grumble at the increase in the Air Estimates if there had been a decrease in the Navy and Army Estimates. In his own opinion the Air Ministry should be run absolutely independently and no attempt should be made to co-ordinate the Flying Services of the Navy and the Air Force.

Sir Frederick Sykes (formerly Chief of the Air Staff and later Controller-General of Civil Aviation) said that the House as a whole was very indulgent to the air because it recognised that these islands would be dependent on the air for their defence, but he suggested that the Estimates should receive very careful scrutiny. He said that there were three alternative policies for the Air Ministry. The first was to build up as rapidly as possible the numerically largest uniformed personnel. The second was to expend time and resources on improving the technique of operations, personnel and matériel. The third was one of compromise between the two which was what the Air Ministry seemed to be adopting.

As to the expansion of squadrons he said he would like to see more of them for less money. He agreed with Admiral Sueter that the Air Force should have its own engineering branch. On the subject of flying clubs he thought that it would be better to keep them for those who could already fly than to try to teach flying.

On the subject of reserves he said that if we were going to enrol mechanics who have a knowledge of aircraft it meant taking them away from their industry at the very time when they would be most wanted in that industry, namely, in time of war. If we were not

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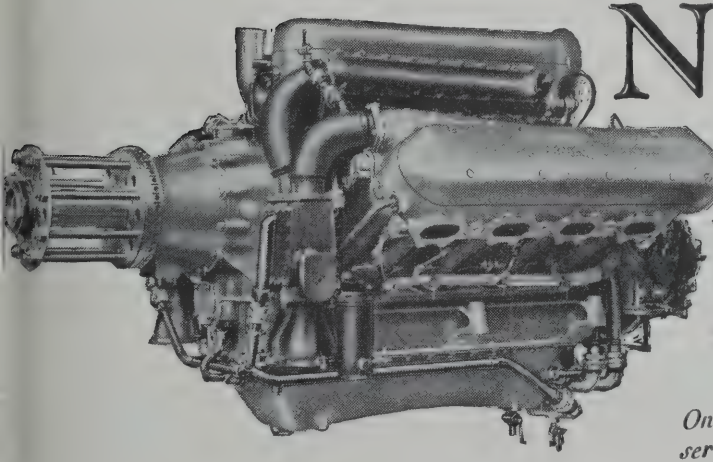
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going to enrol such men others would have to be taught to be mechanics on machines which were actually being flown and therefore the danger of flying those machines would be increased.

He advocated the expenditure of more money on research and experiment and civilian flying and economies in other directions.

SIR HARRY BRITTAIN (who is a Director of D. Napier and Sons Ltd.) said that although the air lines of other countries might have covered a greater mileage than ours there was no country which had reduced the risk of civilian flying as much as we had in this country. The engines which we used for civilian flying were all made for war service and had to do an extraordinarily strenuous test before being put into use. The system in use at Croydon would be very difficult to improve. But he suggested that Croydon was a very bad site and he would like to see one nearer the heart of London.

He pleaded for some guarantee of continuity of aircraft work for the Aircraft Industry so that orders could be sent out on something like a three-year basis in order that factories might arrange their programmes accordingly and keep their men employed. It was only fair to a skilled mechanic that when he got a job he should feel that it would last. He wished Sir Samuel Hoare *bon voyage* in his forthcoming trip to the Near East.

SIR SAMUEL HOARE, replying on the debate, thanked Sir Harry for his good wishes and the House for its sympathetic attitude. He thought that there had never been a question of national defence in which "so conspicuous an agreement had been shown." In every case where there had been an increase in expenditure in this year's Estimates it was due to decisions taken by Lord Thomson and Mr. Leach when Mr. Snowden was Chancellor of the Exchequer.

As to the vast increases which Mr. Snowden now lamented he said that it must be obvious that as the Air Force expanded so the overhead charges would tend, as they always did, to decrease. In the early days of an extension scheme there were always large outlays of capital expenditure but this would come to an end and we should only have the maintenance of the actual squadrons.

The debate had produced almost a record number of interesting speeches and he would endeavour to answer the points raised. The Air Ministry was intentionally increasing the number of squadrons slowly not only on the grounds of expenditure but so as to ensure that the technique and quality should be as high as possible.

Replying to Admiral Sueter he said that the Air Force List showed that the ages of R.A.F. officers even in the senior ranks was much lower than in either of the other Services. As to the Royal Aircraft Establishment he believed that the money was being well spent and it would be an irreparable blow to research and aeronautical progress if the activities at Farnborough were restricted or abolished.

As to an engineering branch of the R A.F. the Air Ministry had come to the conclusion that it was better not to have too many departments as specialists and it was better to have knowledge of aeronautical engineering diffused as widely as possible and on that account they had up to the present been opposed to the institution of a special engineering branch. [The words "up to the present" are significant. It is probable that as the Air Force develops the necessity for a specially trained corps of engineers will be recognised.]

As to airships he said that steps were being taken to avoid the risk of turning adrift men at Cardington while the shed was being enlarged for the building of the new big ship.

He assured Sir J. Davidson that the subject of the mobile defence of the Empire was being investigated very carefully by the Air Staff and the Air Ministry.

On the subject of the Ministry of Defence he thought that if there were no past history and if one were starting entirely fresh in a new country one would probably start with a single Ministry of Defence, but any great change of this kind would have to come about from below rather than be super-imposed from the top. He meant that it would have to come as the result of better co-ordination between the three Departments, closer association between their Staffs, better pooling of knowledge between them, and more constant intercourse, whether in the Committee of Imperial Defence or in a number of Departmental Committees. Thus stage by stage a fabric might be built which would gradually come much nearer to a Ministry of Defence than anything we are likely to get by suddenly creating a new superman or a new office of super-men for the three existing departments.

When the Committee of Imperial Defence went into this question two years ago not a single person who had been directly associated with defence problems was in favour of setting up a single ministry. He was not giving away any confidential information in saying that on more than one important occasion the three Chiefs of Staff had taken collective responsibility for the advice on some strategic question that they were offering the Government.

He had listened with a certain amount of amusement to the annual battles that went on when Navy and Army Estimates were discussed on the question of what is called the Fleet Air Arm. He viewed that question as obsolete. However much the battle might continue in Whitehall or in that House, actually on the spot on the aircraft carriers the difficulties were getting less and a better understanding between the officers of the two Services and the Staffs of the two Services was growing up.

Finally he said: "The responsibilities of the Air Force are now three in number: In the first place, the defence of this country against air attack; secondly, the provision of air forces for the Army and Navy and the garrisons abroad; and thirdly, the independent Air Command in Iraq. Those are the three responsibilities that have been imposed on the Air Force by the Committee of Imperial Defence and by the Cabinet."

As to the standard to which we were building up the Air Force we were not attempting to set up actual numbers against actual numbers, we were trying to set up an Air Force adequate to protect this country against the strongest Air Force within striking distance.

As to winning international air races it should be remembered that winning one of these international competitions meant the expenditure of a very large sum of money. He found himself in the position of having to pay for a number of absolute necessities of national defence and so he had very little money for prizes and competitions.

He intended this year to give support to certain long distance flights within the Empire, one between Cairo and Cape Town and another between Cairo and Lake Chad. That was only a beginning and year after year it was hoped that we might make these long-distance flights and "show the flag" over a great part of the British Empire. He admitted that he would like to spend more on Civil Aviation and he hoped that when the urgent necessities of home defence were met there would be more funds available for that purpose.

MR. T. HENDERSON asked whether Sir Samuel had had any conversation with other State Departments as to the necessity of providing shelters for the civilian population in case of air raids.

MR. LANSBURY asked whether it was to become customary for Air Ministers to have a trip to the Middle East and what would be the cost of such trips.

SIR SAMUEL HOARE said that the Air Ministry was considering the question of air raid shelters. He said that it would not be the practice of Ministers to make a trip to the Near East every year.

LIEUT.-COMMANDER KENWORTHY again raised the old question of the difficulty a poor boy had in going to the Cadet College at Cranwell.

SIR SAMUEL HOARE reminded him that boys at Halton and from the Boys' Wing at Cranwell had opportunities of getting free cadetships.

MR. P. HARRIS, MAJOR GLYN and others had sundry words to say but no fresh points of importance were raised.

LIEUT.-CDR. BURNEY, rising towards the end of the debate, made some very interesting technical remarks. In the first place, he said that Doctor Eckener, the famous Zeppelin pilot, had told him that his ship had actually been struck by lightning twelve times and that no damage was done to the vessel. He added for the information of Admiral Sueter that his firm, the Airship Guarantee Company had had five pilots of rigid airships advising them on the position of their controls and they were all agreed as to the design.

Finally he put on record a public protest against sending the reconditioned R.33 to Egypt. He did not consider that the lessons which we were likely to learn were in any way comparable with the risks which we should run by sending an old ship of slow speed and small radius of action out to Egypt. He did not want in any way to inconvenience the Air Ministry but he felt that unless he put his protest on record he might be associated with the idea of sending that vessel to Egypt.

[One is very much inclined to agree with Commander Burney. R.33 may be all right for experimenting around England and for training crews but one does not believe that she is fit for such a long journey as that to Egypt and back.]

LIEUT.-CDR. KENWORTHY registered a protest against paying "Writing Assistants" at Farnborough 17s. a week. The Government ought to be a model employer and these wages were scandalous.

SIR SAMUEL HOARE in reply said that the 17s. a week was doubled by the bonus and that it was paid to girls of sixteeen years of age. The same pay prevailed in the Civil Service generally.

As to the complexity of aeroplanes he said it was very difficult to combine the various demands for safety, performance and protection.

On the subject of airships he pointed out that there was a good deal to be said for building two airships. The double experiment was going to be much safer than a single experiment. If successful this experiment might lead to great economies in our future expenditure by having an Air Ministry ship over which they would have full control rather than being dependent upon the use of a commercial ship for a few weeks of the year.

[There is of course the other argument that two commercial ships might have been built by two rival firms in competition and that they might both have been bought by the Air Ministry after completing their tests at the firms' expense so that the Air Ministry would have full control over two competing types.]

He pointed out that it would cost too much to go back to the original scheme proposed by Lieut.-Cdr. Burney. Of the £1,250,000 which was to be spent on airship experiments only about £200,000 was to be spent on the Government airship. The place selected in India for the mooring mast had been chosen on commercial and not on military grounds. The Air Ministry had offered to refer Cdr. Burney's new design of mooring mast to the Technical Committee to which he had already alluded. If the Committee approved, every facility would be given for its being adopted. Their policy was to make the Air Ministry experiment with the Air Ministry airship but to give the greatest possible scope to Cdr. Burney's scheme.

THE ROYAL AERO CLUB BANQUET.

On Mar. 23 the Royal Aero Club and the S.B.A.C. entertained at a banquet at the Savoy Sir Sefton Brancker, Mr. Alan Cobham and Mr. A. B. Elliott on their return from the journey to India and back. Just why Mr. Elliott's name did not appear on the programme is not self-evident.

HIS GRACE THE DUKE OF SUTHERLAND, Vice-President of the Royal Aero Club, who was in the Chair, proposing the toast of The Guests, expressed his pleasure in welcoming Sir Sefton. He said that he was a joy to work with and his unflagging keenness was a joy to watch. It was hard luck after a journey of 20,000 miles for him to be called in an evening paper "a dapper little man with an eyeglass."

If asked who had done most for Civil Aviation in the last five years he would unhesitatingly turn to Sir Sefton Brancker. He said that Sir Sefton's brain had become completely aerialised. He had blazed a trial which commercial aircraft would follow in a short time.

All the manufacturers agreed that Sir Sefton was the best commercial traveller the air had ever had. Wherever he went people wanted to buy machines of the same sort, and Mr. de Havilland did very well in consequence.

The Duke said that he hoped that Sir Geoffrey Salmon and Sir Philip Sassoon would not forget the light aeroplanes. They had selected one for his own use and when it was delivered and when its engine had secured its certificate and when he was not using it himself he would lend it to the

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Royal Aero Club to add to the small number which the Treasury allowed for the light aeroplane clubs.

He added to the toast the names of that great pilot Mr. Alan Cobham and Mr. Elliott. The D.H.50 with the Siddeley Puma engine on which they went to India had been ordered off the rank like a taxi. He looked forward to the day when the public would fly as an ordinary method of transport.

Sir Philip Sassoon, Under-Secretary of State for Air, supporting the toast, said that the flight had touched the imagination of the whole nation and raised the prestige of British flying. The popularising of flying depended not so much on spectacular flying as on the demonstration of ordinary performances. They had proved the air line to India to be a practical proposition. It was difficult to believe now that money would not be forthcoming. It was a happy augury that such a great step forward had been made by the Director of Civil Aviation himself. He was glad to see them all back in robust health.

Mr. T. O. M. Sopwith, Chairman of the S.B.A.C., said that the first intimation of the flight to him came from Mr. C. R. Fairey, then Chairman of the S.B.A.C. Mr. Fairey said that Sir Sefton Brancker wanted to fly to India and that the Treasury would not "ante up," so he himself (Mr. Fairey) guaranteed the balance of the necessary fund on behalf of the Industry.

When the proposition was put to the Industry not a single firm wavered. Not only did all come in with their whack but others came in. De Havilland paid more because his machine was being used and the A.D.C. paid more because it was their engine. The Anglo-Persian Oil Company and the Wakefield Castrol people also helped.

He hoped this flight would be the forerunner of a great Imperial Airway. We could not sit still till flying was the normal way of going to India or Australia. It was interesting to note that the least troublesome part of the journey was in the East.

Departing from his text Mr. Sopwith pointed out that we had finished the War with the largest and best Air Force in the World. To-day we were numerically fourth. We must keep our insurance policy alive, and should not rely on calling in our neighbours.

Returning to his subject he said that this was one of the greatest flights because it was done without organisation. Everything in the machine did the whole journey. They even finished with the same tail skid.

He hoped that the next Aero Club dinner would celebrate the return of one of the great international trophies. We had not had a serious plug at one of them for years.

He was justly proud of two such ambassadors of the air as Sir Sefton Brancker and Mr. Cobham. They could not be kept out of the air. When Sir Sefton was ill Mr. Cobham went joy-riding round Everest. When the machine was being overhauled Sir Sefton borrowed a machine from the R.A.F. and toured the North-West frontier of India. He hoped they would be spared for many years to come.

Sir Sefton Brancker, replying, said that he took no responsibility for the performance except for wangling a very small sum out of a depressed and somewhat scandalised financial department.

They had proved that flying was not a stunt. They were not blazing a trail, they were only following footsteps. Sir Geoffrey Salmond did the flight five years ago. But they were the only people who had come back. It was Mr. Holt Thomas who had lured him into Civil Aviation.

All the credit for this flight was due to the De Havilland machine and the Siddeley Puma engine and the pilot and mechanic. The flight was easy with such a crew. They had got into and out of many difficult aerodromes and Mr. Elliott had spent many unpleasant hours cold and hot working on the machine. There was never a happier family. He himself had merely sucked in fresh air all day and banqu at night and delivered hot air in many languages. He proud to have been a sleeping partner in such airmansh

He had been asked to tell of his adventures but he said his adventures occurred after they had landed. The thrill he had had was in landing on the Maidan at Calcu under the tree where he and Jullerot had assembled the f aeroplane (a Bristol box-kite) in India in 1910.

During this journey he had always arrived fresher t when he got off in the morning. He got pneumonia pleurisy on the ground at Delhi, was better when he arri at Calcutta, and grew worse after he landed. He belie that one could fly night and day as a passenger with l fatigue than travelling by rail.

Pilots would find that flying in the East was easier t here. Piloting over the desert was a rest cure. With g organisation the route could be covered in any weather. they must have money to develop the route. In cross Europe friends, enemies and neutrals had helped all t could. When they landed in Germany and expected to interned the whole countryside rose to push them off.

He believed that air transport would help the peace Europe. They had set out to prove that their flight damned easy and they had done it.

Mr. Alan Cobham said that he was happy to come back they started. Sir Sefton Brancker took a lot of beating a passenger. The Press had been kind and had not m out that the flight was sensational and had pointed out right things.

If flying was not simple it must be made so. In ten y it would be quite ordinary. Flying would not succeed so as it was wonderful.

He hoped that all the firms concerned were satisfied the result. He also hoped that light aeroplanes would developed.



"SMILIN' THRO'."—Sir Sefton Brancker (right), Mr. A Cobham (left) and Mr. A. B. Elliott, at Croydon on th arrival by air from India.



IN INDIA.—This photograph shows the D.H.50, the latest form of travel, with the local elephants.

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Mr. Elliott said that his ambition was to get the job done without a forced landing, and he did. They had flown 219 hours with two top-overhauls. The A.I.D. were disappointed that they could not find any trouble. No new parts had been wanted in the machine.

He had enjoyed the whole flight. Mr. Cobham had said to him that the flight was being organised and asked him whether he would like to go to India. He said that he would, so they went.

Sir Sefton Brancker had been splendid. He never asked questions about the machine. He just got into it.

Mr. Elliott thanked the R.A.F. in Iraq and in India for being always ready to give a hand.

Sir Charles Wakefield in a tabloid speech proposed the toast of Aviation and descanted on the future of flying.

Lt.-Col. Moore-Brabazon, Parliamentary Secretary to the Ministry of Transport, replying, said that the Royal Aero Club once represented the whole of aviation but now everybody looked to the Air Ministry. He was amazed at the ignorance not only of the public but of those who sat in another place with him. He had heard it proposed that Civil Aviation should be put under the Board of Trade. If anywhere it ought to be under the Ministry of Transport, but he was sure they could not better the Air Ministry.

What was at the back of the mind of the pioneers of aviation was to bring the World together, but aircraft had turned out to be one of the most destructive instruments of war. Sir Sefton's flight had brought them back onto the right line. He hoped to see British aircraft in every town just as British ships were in every port.

Lt.-Col. Mervyn O'Gorman, proposing the toast of The Chairman, said that even a tabloid speech was too long and proceeded to be as witty as ever for too few minutes. He remarked that in securing Safety First the "automatic pilot" might be devised and that if so it would be regarded by aviators much as the policeman in *Punch* regarded the "automatic cook."

The Duke of Sutherland replied briefly.

The Lesson of the Journey to India.

By Alan Cobham.

[The following notes on the lessons to be learned from his journey to India and back have been kindly written specially for the readers of The Aeroplane by Mr. Cobham. None will deny that Mr. Cobham is our leading commercial pilot. He has had more experience of flying over unknown routes than any other aviator. He rid himself of all romantic ideas about flying long ago. And he regards every problem of air work from a strictly business-like standpoint. It is therefore the more interesting to see that his views as to what constitutes a commercial aeroplane and a commercial air route agree so closely with those which this paper has been endeavouring for years to hammer into the heads of pilots and aircraft designers and aircraft operators.—C. G. G.]

After our flight to Rangoon and back, I feel sure that our greatest opportunities in civil aviation lie out of Europe. Firstly the weather conditions will permit greater regularity in running, and secondly there is little or no transport to compete with aviation, as flying beats existing modes of transport in a good many cases, eight times over.

There will be certain new difficulties to be met. The forced landing question in the majority of cases will be much safer, i.e., the pilot will be able to make a good landing. But what is he going to do with his passengers if he is brought down 200 miles from the nearest white man, with no roads within 400 to 500 miles, railways being out of the question, and the only connection with civilisation being his W.T. (and that may break down) or by tapping a telephone wire many miles inland, is a question that has to be faced. Providing a boat was handy it might get to him in a week or a fortnight, but I doubt whether it would be possible to ship his damaged machine.

I am referring now chiefly to the Persian Gulf. There are portions of the Gulf where it would be impossible even to crash a machine decently, and other places where landing grounds could be made at little or no expense every ten miles. The Cairo-Baghdad route would be simple as compared with European flying.

However it is evident from the foregoing remarks that forced landings, otherwise than on an organised landing ground, must be entirely eliminated.

Another difficulty will be the "taking-off" question. Roughly speaking the relative density of the atmosphere out of Europe, or in the East, at sea level, is equivalent to 2,000 feet at home, and whereas the D.H.50 with full load will take off at between 45 and 50 m.p.h. at home, in the Persian Gulf or India it is necessary to have at the very least 55 m.p.h. speed before she will attempt to lift. And in the summer, in the heat of the day, I am given to understand that another 10 miles an hour is put on to the "take-off" speed.

It is simple to see that we must either have greater h.p. or a larger aerodrome, or greater wing surface, or that we should be assisted by flaps or some other such device.

However the fact remains that 25 per cent. of the useful load will have to be sacrificed in the summer as compared with that same machine's performance at home.

In Europe we have the great weather difficulty to contend with. To be able to fly in almost any weather is mainly a matter of visibility. (Wind and storm so rarely stop flying that we will not consider them this time.) The reason we cannot fly in bad visibility is because we cannot see where we are going, and we cannot see where we are going because we fly too fast, we cannot slow down enough.

I maintain that if we could fly at 25 m.p.h., there would not be more than three days a year when the London-Paris Service could not run. As an example I have been flying myself at 100 m.p.h., and ran into what appeared to be an inky black fog. Instinctively I slowed down, until at last I was only doing 60 m.p.h., and at this speed I could see my way fairly well, and got right through the bad fog patch. But at 100 m.p.h. it would have been impossible. And so I maintain that if we could fly at 30 m.p.h. we could fly through almost any weather, for fog and wind do not go together as a rule, so that the head-wind difficulty would not occur, and as bad weather is more or less in patches, machines would not get very far behind time owing to slowing down.

Of course the machine that will cruise at 90 m.p.h. and also cruise at 30 m.p.h. may be an ideal, but it is what we must aim at. I have not said landing speed, that would come automatically with slow flying, but few people seem to realise that it is because we cannot fly slow enough that we cannot tackle bad visibility. And Visibility spelt with a capital V is the greatest drawback to flying to-day.

Civil aviation to-day is being built up too much upon the skill and pluck of pilots, instead of upon the skill of engineers and the reliability of pilots.

I do not think that the old cross-Channel pilots realise what a high state of skill and efficiency they have attained, and this fact is one of our greatest dangers to-day. If civil aviation is to succeed, the necessity for great skill on the part of the pilot in any branch must be entirely eliminated.

Another great drawback to flying to-day is the utter ignorance of the public on all matters regarding flying. About the main impression that they have in their minds is that it is something very wonderful, dangerous and difficult to do. All of which of course is wrong. It is not wonderful but quite natural, and it can be made quite safe. And in itself on an easy type of machine (and all types of machines could be made easy to fly) it is not a difficult thing to do.

I think there should be more public propaganda on the subject of flying so that the man in the street would know something about the ordinary principles of aviation. This will only come about when we develop the private owner.

Our flight to Rangoon and back was a pioneer flight of survey, and in one sense a commercial flight, although hardly so from an air transport point of view, for certainly we gambled on our engine at times. This meant adventure, and to my mind commercial air transport ceases as such as soon as adventure commences.

However, we completed our 17,000-mile trip with the same D.H.50 and Siddeley Puma engine that we started with, and returned to Croydon after four months' absence with our aeroplane looking little the worse for its trip; which in itself I suppose is a commercial proposition.

Accessories Before and After the Fact.

The machine on which Sir Sefton Brancker, Mr. Alan Cobham and Mr. Elliott made their flight was a D.H.50 designed and built by the De Havilland Aircraft Co. Ltd. Its pedigree was given last week.

The engine was a Siddeley Puma taken straight out of the stock of the Aircraft Disposal Co. Ltd., who loaned it.

Mr. Cobham speaks very highly of the Henderson Patent Doper designed by Lt.-Col. G. L. P. Henderson. This was supplied free of charge and in spite of this it never once failed to start up engine from cold. The simplicity of construction and ease of operation makes it a very valuable article and Mr. Cobham wonders why it has not been fitted to all machines.

Two sets of K.L.G. plugs were used alternately.

B.T.H. Magnetos provided the wherewithal for the plug.

No ignition troubles of any sort were experienced and the magnetos and plugs gave every possible satisfaction.

B.P. and Shell petrol were used. The flight over the Himalayas was done on Shell.

Castrol "C" was the oil used and Mr. Cobham was particularly impressed with the remarkable distribution of this oil. Never once, wherever he landed, did he have any difficulty in obtaining this particular brand.

The Dope on the fabric of the machine used was Titanine and at the end of the flight the machine looked as good as new. In spite of all sorts of extremes of weather the Titanine Dope was not affected in any way.

The tyres used were Palmers. Beyond a slight "topping up" once in India the same air that was pumped into them at Stag Lane in November was brought back again.



The D.H. Type 50 Commercial Aeroplane (230 h.p. Siddeley "Puma" engine) has a comfortably appointed cabin for 4 passengers, or as a freighter can carry 1,150 lbs. of goods.

EXTRACT FROM A LETTER FROM AIR VICE MARSHAL SIR SEFTON BRANCKER, K.C.B., A.F.C.,

written on the conclusion of his 17,000 miles flight from London to Rangoon and back in a D.H. 50, to Capt. Geoffrey de Havilland, O.B.E., A.F.C., F.R.Ae.S.

Dated 18th March, 1925.

"The D.H. 50 proved to be an extraordinarily comfortable conveyance for such a long-distance journey. During the whole trip I was never too hot nor too cold in spite of the great variations in temperature which we encountered, the cabin is remarkably silent, and at the end of more than 9 hours' flying during a day I felt just as fresh as I did starting in the morning.

"The design, both of the aircraft and the engine, proved to be eminently suited to the enterprise, and I was very much struck with the small amount of maintenance that was required on the aeroplane in spite of the fact that it stood in the open in varying climatic conditions at nearly all our stopping places. When we were forced to land in a snowstorm in Germany the machine was dismantled, transported by road 50 miles, and re-erected by unskilled personnel in 36 hours under conditions of considerable difficulty; the machine was in perfect flying order at the end of this episode, and I think this forms a remarkable testimonial to the soundness and simplicity of the design."

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The London Gazette.

Mar. 17.

General Duties Branch.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. R. Buchanan (Jan. 17); A. R. Perry (Feb. 14); A. D. Davies, F. V. Beamish, C. K. J. Coggle, F. F. W. Hall (Feb. 15).

Flg. Off. F. L. Woledge (Capt., Indian Army, retired) is granted the hon. rank of Flt. Lt. (Mar. 5); Flg. Off. A. M. West is transferred to the Reserve, Class A (Mar. 14); the S.S. comn. of Plt. Off. on probation A. E. Carpenter is terminated on cessation of duty (Feb. 20).

Stores Branch.—Flg. Off. H. N. Stevens is placed on the retired list on account of ill-health (Mar. 18).

Reserve of Air Force Officers.—H. D. Morley is granted a comn. in Class A, General Duties Branch, as a Plt Off. on probation (Mar. 17). The following are confirmed in rank:—Flg. Offs.—W. E. de B. Diamond (Mar. 16); G. R. Schooling (Mar. 16). Plt. Offs.—P. J. Waller (Feb. 19); A. E. Ansell (Mar. 16); H. W. Petter (Mar. 16); J. G. Webster (Mar. 16). Flg. Off. R. M. Smith is removed from the Service (Mar. 9).

Memoranda.—The permission granted to Sec. Lt. M. A. K. Smith to retain his rank is withdrawn on his enlistment in the Army (Feb. 11). The following Lts. are deprived of permission to retain rank on conviction by the Civil Power:—J. B. Pirie (Jan. 20); D. V. D. Thomas (Feb. 10).

Mar. 20.

Group Capt. L. W. Brabazon Rees, V.C., O.B.E., M.C., A.F.C., is appointed an Air Aide-de-Camp to his Majesty the King (Mar. 6).

Appointments.

Week ending Mar. 23.

General Duties Branch.—Wing Commander W. H. Primrose, D.F.C., to H.Q., Palestine, for Air Staff Duties, 7/3.

Squadron Leaders A. F. Brooke, to No. 17 Sqdn., Hawkinge, 14/3. C. E. H. James, M.C., to Aircraft Depot, Iraq, 1/3.

Flight Lieutenants S. D. Macdonald, D.F.C., to No. 55 Sqdn., Iraq, 3/3. B. R. Carter, A.F.C., to No. 29 Sqdn., Duxford, 19/3.

Flying Officers R. C. B. Brading, to No. 41 Sqdn., Northolt, 16/3. (Hon. Flt. Lt.) R. O. Rigg, to No. 60 Sqdn., India, 13/3. A. G. S. Tuke, to No. 14 Sqdn., Palestine, 11/3. E. H. Rundle, to No. 1 S.D., Kidbrooke, 23/3. A. G. Thackray, to No. 444 Flight, Lee-on-Solent, 23/3. (Hon. Flt. Lt.) F. P. Smythies, to Marine Aircraft Exper. Estab., Felixstowe, 17/3. (Hon. Flt. Lt.) G. A. Cavis-Brown, to R.A.F. Base, Gosport, 18/3. W. E. Purdin, to No. 6 Sqdn., Iraq, 5/2. H. J. Hunter, to No. 208 Sqdn., Egypt, 9/3. J. V. Kelly and (Hon. Flt. Lt.) L. P. Winters, to No. 45 Sqdn., Iraq, 5/2.

Pilot Officers J. J. Fitzgerald, to No. 84 Sqdn., Iraq, 5/2. J. E. Preston and H. Thomas, to No. 70 Sqdn., Iraq, 5/2. H. E. Nowell, to No. 2 Sqdn., Manston, on appointment to a Perm. Comn. from Cadet College, 9/3.

Medical Branch.—Squadron Leader P. T. Rutherford, O.B.E., to Aircraft Depot, Egypt, 1/3. Flight Lieutenants E. A. Lumley, M.C., M.B., to Basrah Combined Hospital, 28/2. (Hon. Sq. Ldr.) F. W. Squair, M.B., T.D., and G. M. Mellor, to Inspector of Recruiting, 1/4. E. N. H. Gray, D.P.H., to Station Commandant, Iraq, 7/2. J. D. Leahy, M.C., M.B., B.A., to R.A.F. British Hospital, Iraq, 7/2. G. R. Nodwell, M.B., to Basrah Group H.Q., 9/2. Flying Officers D. Magrath, M.B., to No. 4 Sqdn., S. Farnborough, 12/3. B. Pollard, to No. 2 F.T.S., Digby, 20/2.

Stores Branch.—Flight Lieutenant R. Adams, to R.A.F. Depot on transfer to Home Estab., 2/3. Flying Officer H. B. Hawker, to No. 58 Sqdn., Worthy Down, 4/3.

Accountant Branch.—Flying Officer F. L. Wood, to R.A.F. British Hospital, Iraq, 24/1.

The King's Levee.

By command of the King, a Levée was held on Mar. 19 at St. James's Palace by his Royal Highness the Prince of Wales on behalf of his Majesty.

Among those in attendance upon his Royal Highness was Air Marshal Sir John Salmond, Principal Air Aide-de-Camp. Group Captain Cecil Kilner, Air Commodore Webb-Bowen, Wing Cdr. Louis Greig, and Sq. Ldr. R. Lane were also present.

The following officers of the R.A.F. were presented to his Royal Highness:—

Akerman, Flg. Off. W., on first appointment, by the Secretary of State for War. Breese, Wing Cdr. C., A.F.C., by the Lord Privy Seal. de Nevers, Flg. Off. B., on first appointment, by the Lord Privy Seal. Ellwood, Flt. Lt. A., D.S.C., on first appointment, by the Secretary of State for War. Hayward, Sq. Ldr. C., on promotion, by the Lord Privy Seal. Iron, Sq. Ldr. D., O.B.E., on first appointment, by the Secretary of State for War. McDowall, Plt. Off. A., on first appointment, by the Secretary of State for War. Marsh, Flg. Off. F., on appointment, by the Secretary of State for War. Nixon, Flg. Off. L., on first appointment, by the Secretary of State for War. Poole, Flt. Lt. W., A.F.C., M.M., on first appointment, by the Secretary of State for War. Ragg, Flg. Off. R., on first appointment, by the Secretary of State for War. Silvester, Flg. Off. J., on first appointment, by the Secretary of State for War. Steel, Air Vice-Marshal J., C.B., C.M.G., C.B.E., on promotion, by the Secretary of State for War. Stewart, Sq. Ldr. H., on first appointment, by the Secretary of State for War. Wingate, Flg. Off. J., on first appointment, by the Secretary of State for War.

An Appointment.

The Air Ministry announce the appointment of Group Captain Lionel Wilmot Brabazon Rees, V.C., O.B.E., M.C., A.F.C., as Air Aide-de-Camp to the King.

This appointment is additional to that of Group Captain C. F. Kilner, D.S.O., recently made.

The Fleet Air Arm.

The Times of Mar. 21 states:—

In the aircraft-carrier *Eagle*, Capt. L. G. Preston, C.B., of th Mediterranean Fleet, Wing Cdr. E. Osmond, C.B.E., is to becom from to-day the Senior R.A.F. Officer, in succession to Wing Cdr W. L. Welsh, D.S.C., A.F.C.

Wing Cdr. Osmond was formerly a lieutenant, R.N., and took u flying in 1913, in which year he was appointed Flying Officer at th R.N. Flying School at Eastchurch. He held various air command in the war, and at the Armistice was Lieut.-Colonel, R.A.F., Com manding No. 61 Wing, Dunkirk, which was under the orders o the Vice-Admiral at Dover.

The Times of Mar. 23 states:—

The aircraft-carrier *Furious*, which should have gone to Portsmouth for trials in the first week of this month, after her lengthy altera tions at Devonport Dockyard, is now expected next Friday, Mar. 27 If the tests prove satisfactory, the *Furious* will be commissioned on o about June 16 by Capt. John L. Pearson, C.M.G., with the old crew of the *Hermes*, Capt. the Hon. Arthur Stopford, C.M.G., which wil by then have returned from the Mediterranean to recommission. Com pleted in July, 1917, at a cost of £2,436,532, the alterations to th *Furious* during the last two or three years are computed in the new Navy Estimates at £1,689,847.

Air Operations on the N.W. Frontier.

The Daily Telegraph of Mar. 18 states:—

Allahabad, Tuesday.—Fighting planes have carried out operation against the Abdur Rahman Khel Mahsuds, to force the tribesme to release two Hindus whom they captured on independent terr tory. The airmen's objective was attained, and the prisoners hav been returned without ransom.

The Abdur Rahman Khel are the most truculent of the hostil tribes who are taking advantage of the mountain fastnesses beyon Sarwehai. It was this tribe which was responsible for the attac made on Lieutenant Tapp and his scouts early in December last.

The Rugby Cup Final.

The final of the Inter-Unit Competition for the R.A.F Rugby Cup was played at Uxbridge between Flowerdown and Digby on Mar. 21, and resulted in a win for Flowerdown by five points to nothing. The game was very fast and open but it was not really good Rugger.

On both sides there was a strong tendency to kick toward the goal, a fault which may be excusable in the first roun of such a competition, but is very bad in a final. There wa also a great deal too much kicking into touch. The centre found touch, or tried to, with the wings standing still tim and again. Flowerdown were particularly bad in thi respect.

Digby made several good attempts to start passing move ments, but their weakness lay in their stand-off half, wh stood perfectly still to take and give his passes, holding u the whole line. The Digby forwards had ideas about usin their feet in the loose and were unlucky not to score at leas once from some very good rushes.

As there were no programmes giving the names of th teams it is impossible to mention individual players by name but one Flowerdown forward, referred to by friends on th touch-line as "Ginger," was particularly hardworking an exceptionally murderous in defence. The Digby inside-righ showed bursts of speed but was badly supported. The Digb full-back also showed good speed and when not charge down he kicked a good length, but he was a trifle slow i kicking and inclined to let the ball bounce before fieldin it, a dangerous thing to do with so much wind blowing.

Cpl. Wale, the only member of the R.A.F. Representativ Team on either side, scored the winning try and kicked th goal, but it was his only good piece of play during the gam Even if he had no confidence in his wing, who never saw th ball, at least he need not have indulged in frequent aimles kicking forward, a fault which is excusable in an excite young player reared on Soccer and converted to Rugger, bu most amazing in a man who has played so well for the R.A.I

A most cheering sight was the small army of Flowerdow supporters who, flying a huge flag and armed with ever description of noise gadget, had come up from Winchest at their own expense. Their enthusiasm was tremendous an they greeted every bit of play, good or bad, with yells applause for their team who were addressed as "The Rad College." One hopes that the enthusiasm which led to the desecrating his Majesty's uniform with coloured ribbons wi cause that offence to be overlooked by the Powers-That-B At the same time the few supporters of Digby made up lung-power what they lacked in numbers.—C. M. Mca.

Association Football.

R. A. F. v. *R. N.*—The Royal Navy and Royal Marin beat the Royal Air Force at High Wycombe on Mar. 21, three goals to two.

The following account is taken from *The Times*:—

It was a highly creditable victory, for after the Air Force twi had obtained the lead the Navy developed into the better side an obtained the only two goals scored in the second half. Even so, the

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WINNERS OF THE AERIAL DERBY, 1921-1922-1923.
HOLDERS OF THE BRITISH SPEED RECORD, 212.2 M.P.H.
RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.

was so little to choose between the sides that no more than ten minutes remained for play when the winning goal was scored.

A series of snow showers fell during the first half, and the Air Force players seemed able to keep their feet better than did their opponents. The Navy defence was hard pressed several times and excellent goals were scored by Bishop and Francis. Cpl. Warwick, a marine from Portsmouth, then scored a goal for the Navy, all these three goals coming in the course of as many minutes. The Navy were much indebted after change of ends to the fine play of Seaman Vanner, of Chatham. This player, at outside right, has shown consistent form in other representative matches, and his excellent running and accurate centres caused a lot of trouble to the Air Force defence. Pay-Lieutenant Glenister, of Shotley, scored the Navy's second equalising goal from a free kick, and Stewart Woodford shot the deciding goal after some skilful play by Vanner.

In forcing their victory the Navy team played quite good football. All of them were quick on the ball and sure in their kicking, though combination was not often noticeable. The half-backs and backs emerged from a hard match with especial credit. They seldom failed to meet the ball accurately and many of their passes were well directed, though the snow and slippery turf made matters difficult for both defenders and attackers. Altogether, play fell rather below the standard usually seen when the Service teams are opposed, but a crowd of 4,000 people enjoyed a thoroughly well-contested game.

It was the first match in the Inter-Services Tournament. Last season, the Air Force won the cup on goal average. Neither of Saturday's teams played well enough to have much chance against the full strength of the Army.

The R.A.F. team were:—

Flg. Off. G. A. Hadley (Spittlegate), goal; Flg. Off. H. B. Williams (Cranwell) and Flt. Sjt. S. Fretwell (Spittlegate), backs; L-AC. Kennett (Uxbridge), Flg Off. C. N. C. Dickson (Cranwell), and Flg. Off. J. Spooner (Uxbridge) (captain), half-backs; Sjt. F. Francis (Cranwell), AC. Morris (Halton), Cpl. C. J. Baird (Uxbridge), AC. Bishop (Netheravon), and L-AC. Ellis (Henlow), forwards.

Hockey.

Army v. R.A.F.—The Army beat the R.A.F. at Uxbridge on Mar. 13 by 6 goals to 4. The Services' Hockey Championship therefore goes to the Navy, who have defeated both the Army and the R.A.F. without conceding a goal. Lt. Harrison scored three times for the Army in the first quarter of an hour. For the R.A.F., Flt. Lt. Murphy was sound in defence, and Plt. Off. Vines and Flt. Lt. Hampton, the two wing men, were individually good in attack. Sq. Ldr. Vaisey, in the centre, scored twice, but the team combination was poor.

The W.R.A.F., O.C.A., Dinner.

The Annual Reunion Dinner of the Women's Royal Air Force Old Comrades' Association will be held at Victoria Mansions Restaurant, 24, Victoria Street, S.W.1, on Saturday, Apr. 4, at 7.30 p.m.

The dinner is for all who served in the W.R.A.F., and not only for members of the Old Comrades' Association. Tickets, 6s. each, may be obtained from the General Secretary, W.R.A.F.O.C.A., 5, Buckingham Gate, S.W.1. Men friends of diners may be invited to the dance afterwards as guests, and tickets for them (2s.) can also be obtained from the General Secretary.

The Annual General Meeting of the W.R.A.F. Old Comrades' Association has been fixed for the same date for the convenience of country members and will be held at 3 p.m., at the Ex-Service Women's Club, 5, Buckingham Gate, S.W.1.

Air Affairs in Parliament.

THE STRENGTH OF THE R.A.F.

In the House of Commons on Mar. 18, in reply to a question by Major Glyn, the Secretary of State for Air supplied the following information regarding the strength of the R.A.F.

The total strength of the Royal Air Force is 3,282 officers, 115 cadets, 292 warrant officers, 4,512 non-commissioned officers, 22,049 aircraftsmen, 2,406 boys. As regards civilians employed, on the assumption that by "civilians permanently employed" and "those employed as civilian labourers," his hon. and gallant Friend referred to non-industrials and industrials, respectively, the figures were 2,744 and 14,179 respectively.

There are 2,038 officers and 107 warrant officers and non-commissioned officers qualified as pilots, but no information is available as to the number of civilian employees holding pilots' certificates.

There are 274 officers and 38 warrant officers, non-commissioned officers and aircraftsmen under flying instruction.

About 6,250 warrant officers, non-commissioned officers and aircraftsmen, and 87 non-industrial and 1,397 industrial civilians belong to trades directly concerned with the construction and repair of aircraft and engines, and also with maintenance, but many others are employed on duties connected with maintenance, etc., in a broad sense.

There are 51 officers, 315 non-industrial and 2,067 industrial civilians employed at home stores depots, and 28 officers, 310 warrant officers, non-commissioned officers and aircraftsmen, and 36 non-industrial and 256 industrial civilians employed at stores depots overseas.

FOREIGN LANGUAGES IN THE R.A.F.

In reply to a question in the House of Commons on Mar 18 by Mr. Robert Hudson, the Under-Secretary of State for Air, circulated the following answer:—

The Regulations governing the issue of awards for proficiency in foreign languages to Royal Air Force officers are contained in paragraphs 396 to 416 of the King's Regulations and Air Council Instructions for the Royal Air Force. The amounts of the awards, which depend on the degree of proficiency attained and also, for Arabic and Japanese, on whether the officer is serving at home or abroad, are £12 or £24 for French, £25 or £50 for German, £20 to £120 for Arabic, and up to £250 for Japanese. The number of officers who have qualified for awards are 12 for French, seven for German, eight for Arabic, and six for Japanese. Royal Air Force officers in India are eligible for awards under Indian Regulations, and inquiry in regard to these should be made of the India Office.

The Rhymes of Rufus Ruderbar.

Agony, Mark II.

The Lament of a Tragedian forced to play Clown.

Hard
Is the lot of a doggerel bard,
Condemned to write,
Though it sours his soul,
Parodies light,
Lampoons that bite,
Or ribald verses that touch the whole
Of a station wide,
Who straightway seek
To tan his hide
And make it quite
Unpleasant to sit for the coming week,
When his one desire,
One hope, one aim's
To tune his lyre
And set on fire
The rushing waters of Father Thames
With an epic ode
That will make his name
Or a ballad gay
That will pave the way
And ease the road
That lifts him higher
From out the mire
And place his feet on the ladder of fame.



BOXING.—The Manston team (representing No. 1 Group), which won the Wakefield Challenge Trophy on Dec. 4, 1924. Left to right: Flt. Sjt. Martin, Cpl. Fanner, AC.'s Walters, Brown, House, Harris, Rudder. Seated: AC.'s Harper and Gideon, Flt. Lt. Anne, AC.'s McHendrie, and Preston.



17,000 MILES.

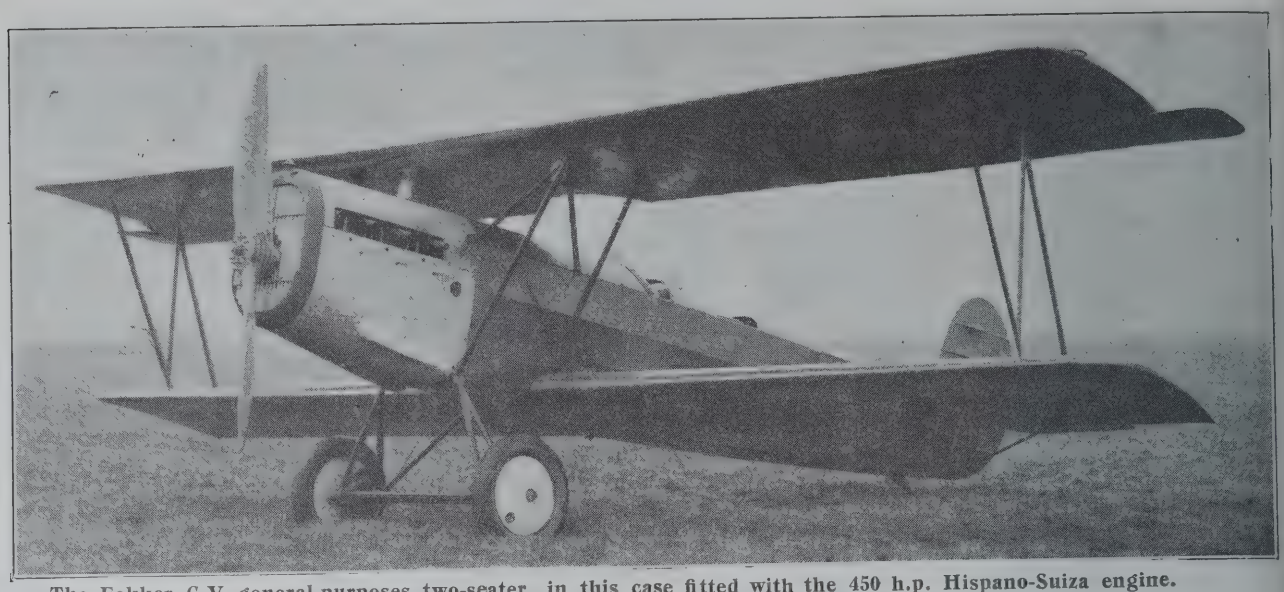
The splendid flight of Sir Sefton Brancker, Mr. Alan J. Cobham, and Mr. Elliott, from London to India and back, again emphasises the extraordinary reliability and practical pre-eminence of K.L.G.'s. In all this mileage, in all varieties of climate and weather K.L.G.'s "just did their job" regularly and uncomplainingly as K.L.G.'s always do. They are designed to withstand every stress that can be imposed upon them by strenuous aircraft duty, and no K.L.G. leaves the factory until it has proved itself up to a standard never before instituted in plug manufacture. K.L.G.'s are, in themselves, a notable factor of safety.

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THE FOKKER C.V.



The Fokker C.V general-purposes two-seater, in this case fitted with the 450 h.p. Hispano-Suiza engine.

The latest production of the N.V. Nederlandsche Vlietuigenfabriek (Fokker), of Amsterdam, is a general-purposes, two-seater known as the C.V. The requirements of peace-time service aviation have been studied to a considerable extent with the result that the C.V can be called upon to fulfil the roles of school machine, heavy or light bomber, two-seat fighter, general-purpose reconnaissance land or sea-plane.

The general construction follows the usual Fokker practice, that is, welded steel-tube fuselage and wooden wings. Three sets of wings can be supplied, large, normal, and small area, and the standardised engine-bearers can take the 185 h.p. B.M.W., the 230 h.p. Siddeley Puma, the 360 h.p. Rolls-Royce Eagle, the 400 h.p. Lorraine Dietrich, the 400 h.p. Liberty, the 450 h.p. Hispano-Suiza, the 450 h.p. Napier Lion, or the 600 h.p. Wright Tornado T.3. In addition the wheel undercarriage can be removed, and a twin-float undercarriage substituted, special fittings being developed for the purpose, whilst hoisting gear for lifting the machine from the water is embodied in the fuselage construction.

It can be seen that a serious reduction in the amount of flying material required to equip an Air Force has been obtained with the C.V., and this economy is still further enhanced by the complete standardisation in the general construction.

Two fixed machine-guns are mounted ahead of the pilot and the observer's seat is equipped with a gun-ring for two Lewis guns. When used as a long-distance bomber or reconnaissance machine, another gun may be fitted to a mounting arranged to fire down and under the tail.

SPECIFICATION.

Engine (for example)	450 h.p. Hispano-Suiza.		
Wing size	Normal.	Small	Large.
Wing area	40.7 m².	36.5 m².	46 m².
Span	13.332 m	12.036 m.	14.628 m.
Length	9.250 m.	9.250 m.	9.350 m.
Height	3.310 m.	3.290 m.	3.380 m.
Weight empty	1,430 kg.	1,380 kg.	1,480 kg.
Useful load	800 kg.	600 kg.	1,000 kg.
Weight loaded	2,230 kg.	1,980 kg.	2,480 kg.
Weight per h.p.	4.9 kg.	4.4 kg.	5.5 kg.
Weight per m².	55 kg.	54 kg.	54 kg.
Speed maximum ...	220 km.	230 km.	210 km.
Climb to 3,000 m. ...	10 min.	8.5 min.	12 min.
Climb to 5,000 m. ...	25 min.	20 min.	32 min.
Absolute ceiling ...	6,200 m.	6,600 m.	5,800 m.
Endurance	3.5	2.7	4

Twenty New World's Records.

On Feb. 9 and 11, the German pilot Wagner, and the Italian pilot Guido Guidi, between them, succeeded in breaking 20 World's Records on a Dornier Wal (two 360 h.p. Rolls-Royce Eagle engines) built by the Societa di Construzioni Mecchaniche di Pisa, of Marina de Pisa.

These records included the speed over 100 kms., 200 kms. and 500 kms. distance, duration and height with 1,500 kgs. (3,300 lbs.) useful load and the speed over 100 kms. and 200 kms. distance and altitude, with 2,000 kgs. (4,400 lbs.) useful load.

With the 1,500 kg. load, the Dornier easily beat all the previous World's records for speed over the 100 kms. 200 kms. and 500 kms. carrying 250 kgs., 500 kgs., 1,000 kgs., and 1,500 kgs.

To attempt to enumerate each separate record beaten or set up would entail using a considerable amount of space, but the remarkable accomplishment of the Rolls-Royce-Dornier can be summarised by mentioning that the U.S.A. have lost nine records, France three, Denmark three; and Italy have set up five new records, making a total of 20 records to go to the credit of Italy.



The new Loening Amphibian (400 h.p. inverted Liberty engine) afloat. In this view the very clean cowling over the engine is shown as is also the position of the wheels when lifted for use on water.

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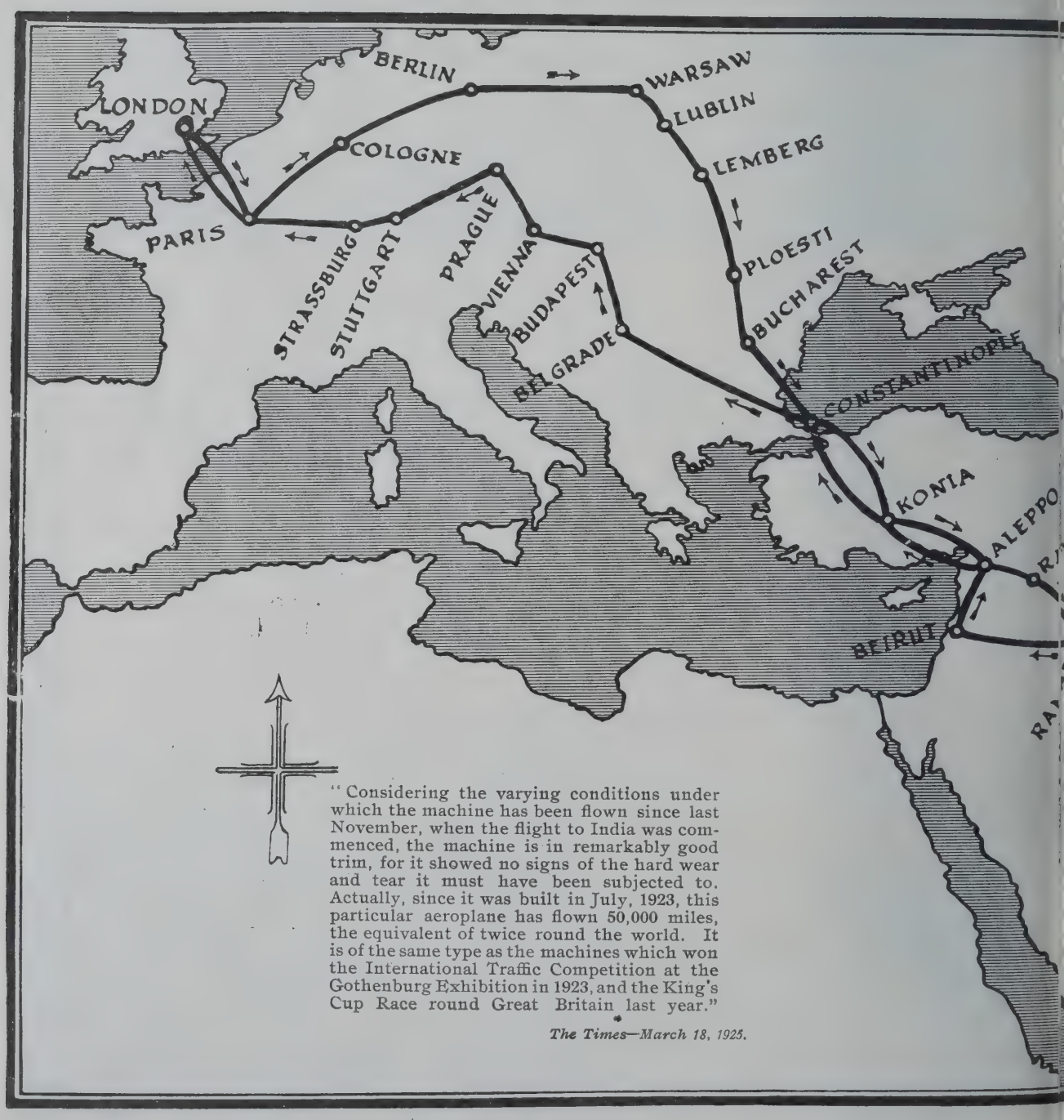
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"Considering the varying conditions under which the machine has been flown since last November, when the flight to India was commenced, the machine is in remarkably good trim, for it showed no signs of the hard wear and tear it must have been subjected to. Actually, since it was built in July, 1923, this particular aeroplane has flown 50,000 miles, the equivalent of twice round the world. It is of the same type as the machines which won the International Traffic Competition at the Gothenburg Exhibition in 1923, and the King's Cup Race round Great Britain last year."

The Times—March 18, 1925.

One Engine: One Aeroplane

17,000 Miles

220 Hours Flying Time.

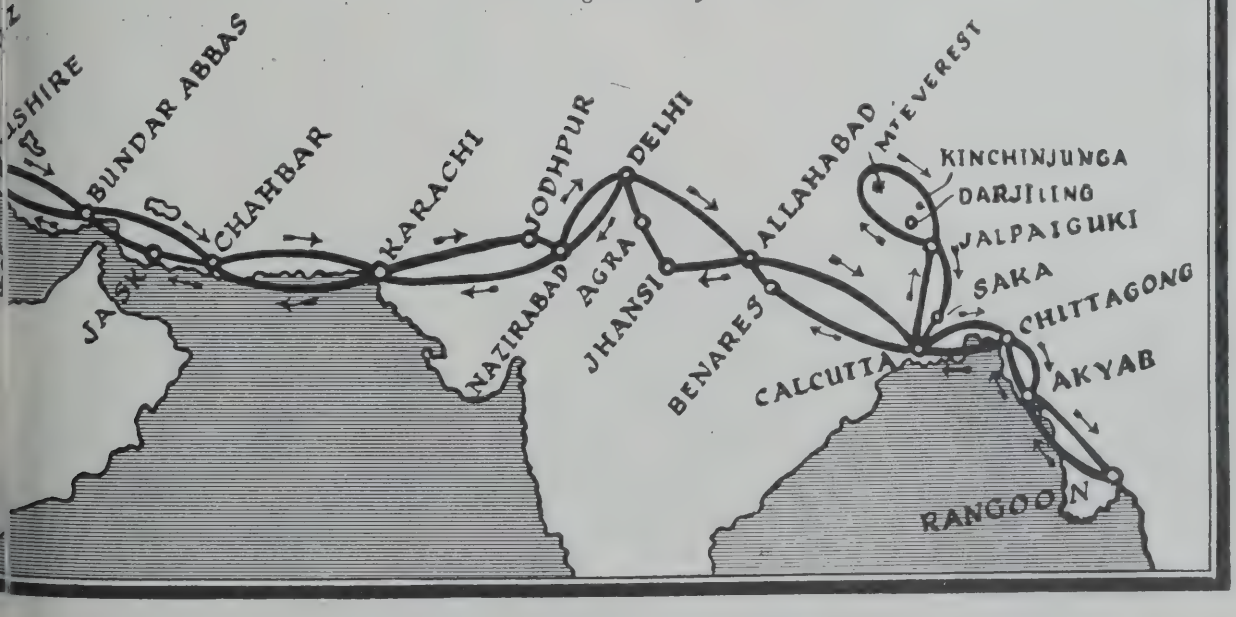
AIR Vice-Marshal Sir W. Sefton Brancker, K.C.B., A.F.C., piloted by Mr. Alan J. Cobham, left Croydon Aerodrome on November 20th, 1924, to investigate an Air Route to the East.

They returned to Croydon Aerodrome on March 18th, 1925, having flown over 17,000 miles in 220 hours flying time using only one Aeroplane and one Engine.

The wonderful qualities which have ensured the outstanding reliability of the PUMA engine are embodied to an even greater extent in the JAGUAR and LYNX Engines—our latest productions.

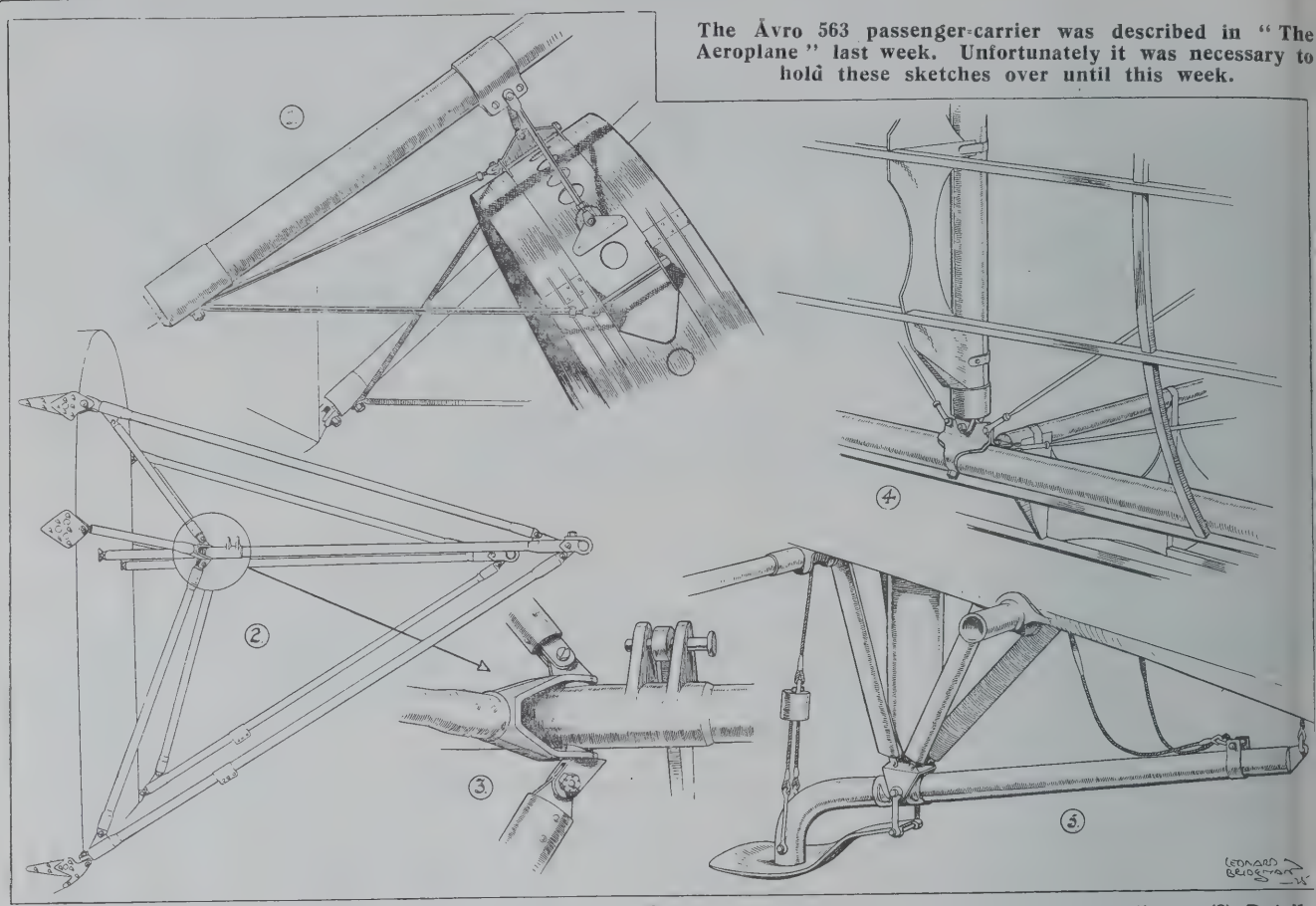
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The Avro 563 passenger-carrier was described in "The Aeroplane" last week. Unfortunately it was necessary to hold these sketches over until this week.



DETAILS OF THE AVRO 563.—(1) The eight-point suspension of the radiator. (2) The engine mounting. (3) Detail of joint in (2) and fixing for the Condor spring-link suspension. (4) After fuselage structure. (5) Tail skid and sockets for handling tubes.

The Royal Aeronautical Society.

It is announced that Col. W. Lockwood Marsh, who has been Secretary of the Royal Aeronautical Society since 1920, has tendered his resignation of that position to the Council of the Society and that the Council have regretfully accepted it.

Col. Marsh's action in this matter has been prompted by a recognition of the far from satisfactory state of the Society's finances and of their inability to continue to meet the expense of a paid secretary. The Society in the present state of the Aeronautical Industry has but a limited field from which to draw its membership, and the expenses which it must incur to maintain its very high scientific prestige are relatively heavy. It has had to depend in the past on the generosity of certain individuals to meet those expenses, and the rate of expansion of membership has been insufficient to place it in a really satisfactory self-supporting position, and it will in the future have to depend on the services of an Honorary Secretary.

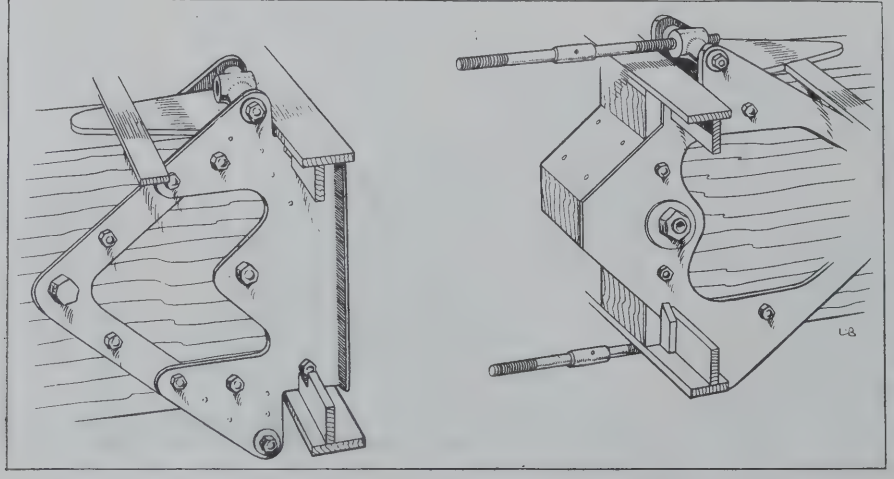
Col. Marsh will continue to act for the Society until the end of the present financial year.

This state of affairs will be deeply regretted by all who are aware of the history and the work of the R.Ae.S. Col. Lockwood Marsh during his tenure of the post of Secretary has served the Society extremely well and has undoubtedly done much towards increasing the high standard which the Society has always maintained in its proceedings, and he cannot but be a very serious loss to the Council. His resignation at this particular moment is more regrettable in that there does seem to be a prospect that the Aeronautical Industry is about to enter upon a period of relative prosperity which should lead to a considerable increase in the Society's membership and revenue for there is no doubt that there are many persons who are restrained from applying for membership by their own state of financial stringency.

The Cambridge Aeronautical Society.

On Wednesday, Mar. 11, Mr. Bradshaw gave an extremely interesting lecture on "The Failure of the Petrol Engine as a Prime-Mover." In the course of this he outlined a scheme for a combined internal combustion and steam plant in which the I.C. engine heated the boiler, and he also discoursed on the subject of elliptical cylinders.

Mr. Bradshaw has promised to present to the University Engineering Department one of his oil-cooled engines in section, and also a specimen of elliptic cylinders and pistons.



AN AVRO SPAR JOINT.—This sketch shows an interesting joint between two sections of a wing spar used on a recent Avro machine. The tapered tongue on the right-hand section enters a box on the left section and takes the shear on the joint. The right- and left-handed screws top and bottom pull the whole tight and one or other will take the tension load arising from bending moments. The compression load on the other side is taken on the butting face of the spars themselves.

Blackburn AIRCRAFT



A broken coast-line studded with islands and extending hundreds of miles can be satisfactorily patrolled by a small number of Blackburn torpedo-carrying and bombing aeroplanes.

The Blackburn Company are specialists in these machines fitted with pontoons. They are exceptionally strongly built, have an excellent performance, carry a second man and dual control.

The "Swift" seaplane and other aircraft, both water and land alighting, may be inspected at the Company's Flying School, Brough, Near Hull.

THE BLACKBURN AEROPLANE AND MOTOR CO., LTD.,

Telegrams: "Propellers, Leeds." OLYMPIA, LEEDS. *Telephone:* 601 Roundhay.

Experimental Factory: BROUGH, Nr. HULL.

London Office: AMBERLEY HOUSE, NORFOLK STREET, STRAND, W.C.2

Telephone:—Central 7532.

The Caspar C.J.14.

Some time ago it was mentioned in The Aeroplane that a new firm had been formed in Denmark under the name Dansk-Aero Industrie Aktielskabet, of Copenhagen, and that, as a Danish branch of the Caspar-Werke, of Travemünde, machines to the designs of Dipl. Ing. E. Von Loessl would be constructed.

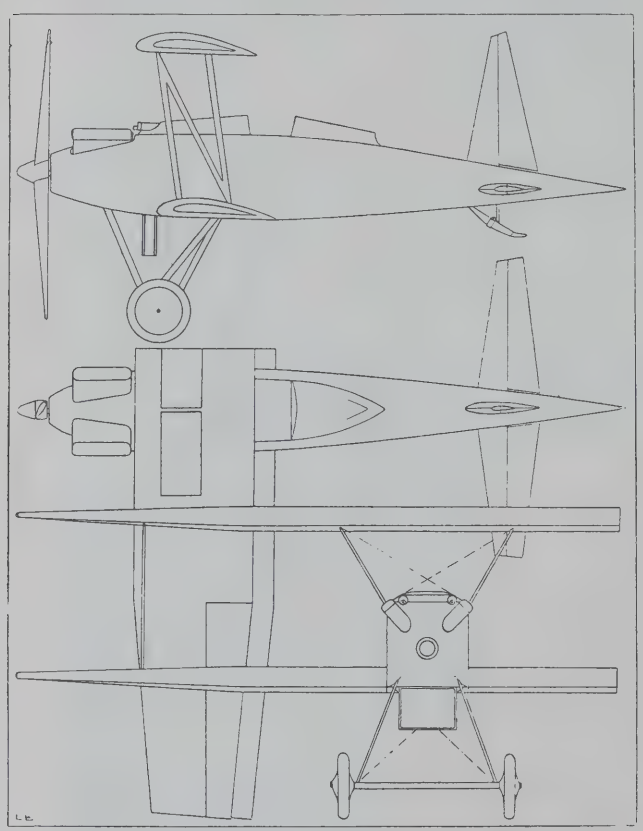
The first machine to be turned out under this firm's name is a small single-seater fighting aircraft known as the C.J.14.

The machine has been produced with a view to obtaining a particularly high speed, a good climb and extreme manœuvrability, and special attention has been paid to the question of quick dismantling, erecting, and ease of manufacturing facilities.

The fuselage is made up of three portions. The forward portion, extending back to the rear spar, is built up of seamless steel tubes and carries at its nose a detachable engine mounting. Although in the attached photograph and outline drawing the machine is shown fitted with a 300 h.p. Hispano-Suiza engine, the C.J.14 has also been equipped with a 350 h.p. Siddeley Jaguar air-cooled radial engine, and for this engine, the mounting is made to swivel, thus enabling the back of the engine to be made readily accessible by the undoing of two bolts.

Aft of the rear spar the fuselage is of wooden construction and is three-ply covered. The attachment of this section to the front portion is by four quick locking attachments. The extreme rear portion of the fuselage consists of a metal framework carrying the entire tail unit and tail-skid.

Two Vickers machine-guns are mounted on a tubular framework on the deck of the fuselage in a very accessible position.



The wings are of all-wood construction, with three-ply covering. The top plane is in one piece, while the bottom plane is in two halves, attached by quick-release fittings to two steel tube false spars which pass across the bottom of the fuselage.

The tail unit, which is detachable, consists of fin, rudder, tail plane, and divided elevators, and on removing the aluminium cowling over the tail-piece, all controls are immediately accessible.

The pilot's cockpit is very roomy, and owing to the narrow chord and large gap of the wings, the visibility from the pilot's point of view is excellent. A petrol tank with 2½ hours' fuel is fitted under the pilot's seat and is supplemented with a smaller service tank which may be dropped in case of emergency.

The undercarriage, centre-section and interplane struts are all of streamline steel tubing. The undercarriage springing is by steel springs which are sensitive to the slightest unevenness and yet are equal to the heaviest shocks.

The whole machine may be erected and dismantled in a very short time. All quick-release bolts are not lock-nutted but are kept in position by springs, a feature found in all Caspar aircraft. By this means the machine may be dismantled without the aid of any tools.

The R.A.E. Again.

In *The Engineer* and in *Engineering* of Feb. 20, there appeared a series of advertisements of vacancies for draughtsmen at the R.A.E. at Farnborough. These advertisements called for draughtsmen of Grade I for photographic and wireless work and for draughtsmen of Grade III for aircraft and aero-engine work, for photographic and for wireless work.

For the Grade I appointments good workshop and technical training and at least six years' experience of the particular class of work involved are required. The starting salary in this grade is £160 per annum plus Civil Service bonus—producing a total of £262 5s. per annum.

For Grade III good training and some experience are required, and the remuneration offered, with bonus, ranges from £3 8s. to £4 4s. 2d. per week.

The minimum rate recognised by the Association of Engineering and Shipbuilding Draughtsmen for trained men is £5 per week or £260 per annum. The salaries offered by the R.A.E. are not merely much less than fair wage for any reasonable capable draughtsmen—they are obviously totally inadequate to allow of any decently brought-up human being existing upon them.

There is a theory that Government Departments should set the average commercial employer of labour a good example in regard to conditions of employment, and Government contracts with private commercial undertakings invariably contain a "fair wage" clause. Moreover the members of any organised trade union can invariably squeeze Government Departments which employ direct labour for the highest current rate of wages.

Where a worker is of a class which is not organised and which would prefer to remain a free agent in disposing of his labour however, Government Departments will openly advertise wages which the worst type of private employer would hesitate to mention. Even local authorities of the County Council type—bad as they are in this respect—are a little less shameless in this sweating of non-union employees than are the great Departments of State.

It is difficult to believe that all politicians are congenitial idiots and it must be obvious to some of them that official tolerance of the sweating of unorganised workers in Government establishments must lead either to the avoidance of Government employment by any but the lowest grade of

General arrangement drawings (above) and a three-quarter rear view of the Caspar C.J.14 single-seater fighter. Although shown fitted with the 300 h.p. Hispano-Suiza engine this machine has been designed to take the 380 h.p. Siddeley Jaguar engine. The following is a brief specification :—

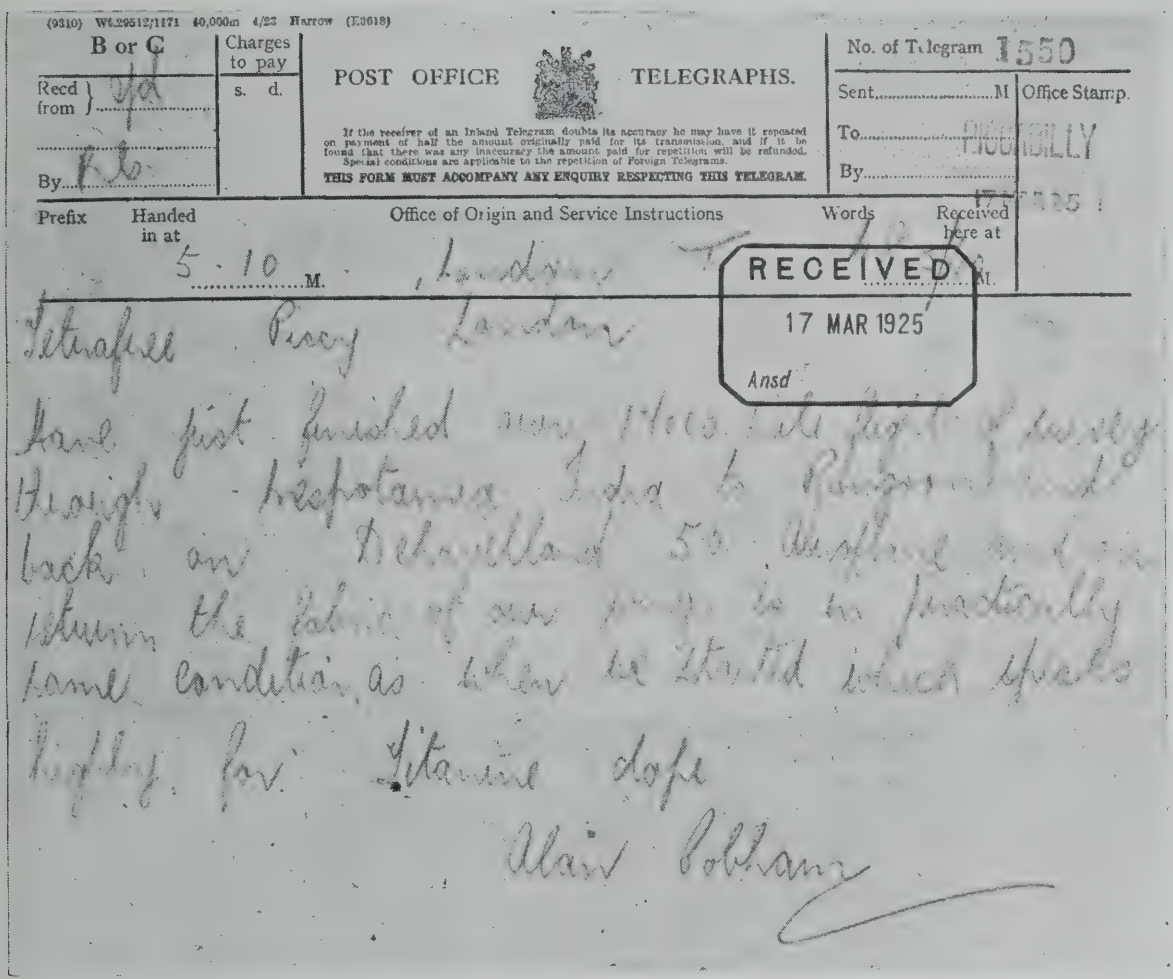
Span	9 m.
Length	5.4 m.
Height	3.5 m.
Weight, empty	800 kgs.
Useful load	400 kgs.
Total weight	1,200 kgs.
Range	3 hours.
Speed	270 km.p.h.
Climb	1,000 m. in 60 secs.



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back on DeHavilland 50 Aeroplane and on
return the fabric of our plane is in practically
same condition as when we started which speaks
highly for Titanine dope

Alan Cobham

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Works { HENDON. NEW YORK.

worker or to the forcing of those workers into the trade union ring.

The Association of Engineering and Shipbuilding Draughtsmen, which is a body formed for the protection of its members, but which one understands is trying to keep to the legitimate objects of such a society and to keep out of the political Labour movement, has caused to appear in those issues of *The Engineer* and *Engineering* which contained the R.A.E. advertisements, a request that before negotiating with Government departments for any posts draughtsmen should communicate with the Association.

The R.A.E. has less excuse for sweating its staff than has the private manufacturer—and the knowledge that it treats its junior technical staff so disgracefully must tend to discredit the whole aeronautical industry in the eyes of members of the better established branches of engineering and so hinder the influx into the Aircraft Industry of men having a preliminary general engineering training.

The Work of the Siddeley Puma Engine.

In connection with the flight of Sir Sefton Brancker and Mr. Alan Cobham to Burma and back on the D.H.50 with a Siddeley Puma engine, the Aircraft Disposal Co. Ltd. have sent this paper a batch of interesting documents dealing with notable performances by the Puma, of which engine that firm holds practically all the saleable stock.

From the point of view of a reliability test for an aero-engine the Circuit of Australia by Colonel H. C. Brinsmead on a D.H.50, fitted with a 240 h.p. Siddeley Puma, is perhaps the stiffest trial which any engine has negotiated successfully. The circuit consisted of an 8,000 miles' flight in extreme temperatures and was completed in 25 consecutive days with an average of four hours' flying daily.

Another example of the reliability of this famous engine is Mr. A. J. Cobham's flight to Africa from London in one day, and back again, 3,000 miles all told, in 28 hours' flying time.

In 1924 a D.H.50 with a Puma engine won the King's Cup Air Race over a circuit of 1,000 miles, maintaining an average speed of 106.66 miles per hour.

Fitted to the same type of machine the Siddeley Puma won the Traffic Competition at Gothenburg in 1923 with 999 points out of 1,000. Mr. Alan J. Cobham, who was the pilot of the machine on this historical occasion, in a letter to the Aircraft Disposal Co. Ltd., who are now the sole agents for these remarkable engines, states that he considers the Puma continues to hold its own as the best commercial engine owing to its reliability, accessibility and endurance. He added in the same letter that the Puma would stand a lot of hard punishment, and would respond to kind treatment and throttling down, by giving continual good running. Mr. Cobham should certainly know all about the Puma.

Apart from the big flights in which it has obtained such well deserved notoriety, the Puma engine has been used consistently and exclusively in the D.H.9 and D.H.50 machines on the De Havilland Aeroplane Hire Service and School of Flying. Mr. St. Barbe, the Business Manager of the De Havilland Aircraft Co., told the Aircraft Disposal Co. that in four years over 600,000 miles had been covered, with a record of reliability which was remarkable. From the tropical conditions of Egypt to the cold of Finland Puma engines had given faultless service.

The Puma engine is also being used by two Air Transport Companies in Australia, two in Great Britain, one in Spain and four in various countries in Northern Europe.

A letter from Major Smeyers, commanding the Air Section of the Belgian Army, addressed to the Minister for National Defence at Brussels, describes certain tests undertaken by his Department with a D.H.9 fitted with a Siddeley Puma. The first test flight took place on Aug. 22, 1924, and lasted 8 hours 25 minutes, the engine doing 1,100 r.p.m. until the final hour, when it did 1,030 r.p.m. The total petrol consumption was 330 litres and 31 litres of oil.

The second test flight took place a week later and lasted 12 hours and 3 minutes, the engine doing 1,150 r.p.m., and the total fuel consumption being, petrol 492 litres and oil 45 litres.

The letter concludes by saying that at the end of each test an examination of the engine showed that neither the cylinders nor the sparking plugs had the slightest trace of any abnormal carbonising.

Lisbon—Portuguese Guinea.

Capt. Pinheiro Correia, Lieut. Sergio da Silva and Lieut Manuel Gouveia, of the Portuguese Army, left Lisbon on Mar. 7 in an attempt to fly to Portuguese Guinea. They are using a Bréguet 14A.2 biplane. They were compelled to land in the province of Algarve owing to bad weather and have returned to Lisbon to obtain a new machine as the one in which they were flying was damaged.

New Technical Literature.

U.S. National Advisory Committee for Aeronautics.—Report No. 195.—Standardisation Tests of N.A.C.A. No. 1 Wind Tunnel. By Elliot G. Reid.

Report No. 204.—Forces on Airships in Gusts. By C. P. Burgess.

Technical Note No. 209.—Tests of Rotating Cylinders. By Elliot G. Reid.

Technical Note No. 210.—The Testing of Aviation Engines under Approximate Altitude Conditions. By R. N. Dubois.

Technical Note No. 211.—Aircraft Engine Design. By E. E. Wilson.

Technical Note No. 212.—Simplified Propeller Design for Low-Powered Airplanes. By F. E. Weick.

Aeronautical Research Committee, R. & M. No. 929.—Some Experiments on a Slotted Aerofoil. By H. B. Irving and A. S. Batson.

R. & M. No. 937.—Measurements of Lift, Drag and Pitching Moment of the 1/5 scale Model of the Bristol Fighter with Airscrew Running. By E. F. Relf and L. J. Jones.

Lubrication.

For some time past the Editorial Talbot has been running on Shell lubricating oil of a quality specially recommended for that type of engine by Mr. Shaw of the Shell Co. The result has been eminently satisfactory. There has been a marked decrease in the oil consumption and quite a remarkable improvement in the running of the engine as compared with the results obtained from various oils bought haphazard at garages.

Another satisfactory feature of this oil has been the ease of starting, even during the recent cold weather, owing to the absence of gumminess when the engine is cold. This particular grade of oil is very thin when cold and yet does not seem to lose any of its viscosity when hot. Experience convinces one that Shell oil intended for any particular type of engine is entirely suited to its work.

Tyres.

In these days of general enforced economy and of universal motoring anything which will reduce the cost of running a car deserves recommendation. Just about twelve months ago one was advised to fit a set of Dunlop Cord covers to the editorial Talbot, which is probably about as severely used as any car in the country, its function in life being to get there and back with the least possible waste of time. And one feels that the makers of those tyres deserve recognition.

The set of covers which were fitted are still on the car and had run up a record of some 9,000 miles on the speedometer before that instrument broke. Since then they have covered at least another 2,000 miles, and though the corrugations on the treads of the tyres have nearly disappeared there is no sign of deterioration elsewhere on the covers. In the whole of that mileage one cover which had worn quite flat on the tread suffered a puncture and that was the only casualty.

R.A.F. officers who live on out-of-the-way aerodromes, and must perforce rely on their cars for regular transport when they desire to reach civilisation, will doubtless be glad to know that the firm's slogan "Fit Dunlops and be satisfied" is justified by experience.—C. G. G.

Receivership.

George England (1922), Ltd.—I. M. Henderson, of 2, Moorgate Buildings, E.C.2, was appointed Receiver on Feb. 26, 1925, under powers contained in debenture dated Dec. 14, 1923.

Mortgages and Charges.

Harrogate Aerodrome and Land Development Co., Ltd.—Particulars filed of £6,000 debentures authorised Jan. 26, 1925, charged on the Company's undertaking and property, present and future, including uncalled capital, the amount of the present issued being £3,800.

Metal Propellers, Ltd.—Particulars filed of £80,000 debentures authorised Mar. 6, 1925, and covered by trust deed of even date, constituting a fixed charge on leasehold hereditaments, together with factory, etc., thereon, at Wadon Marsh Lane, Croydon, and British Canadian and foreign patents, and a floating charge on the company's undertaking and property, present and future, including uncalled capital, the amount of the present issue being £60,000. Trustees:—The Whitehall Trust.

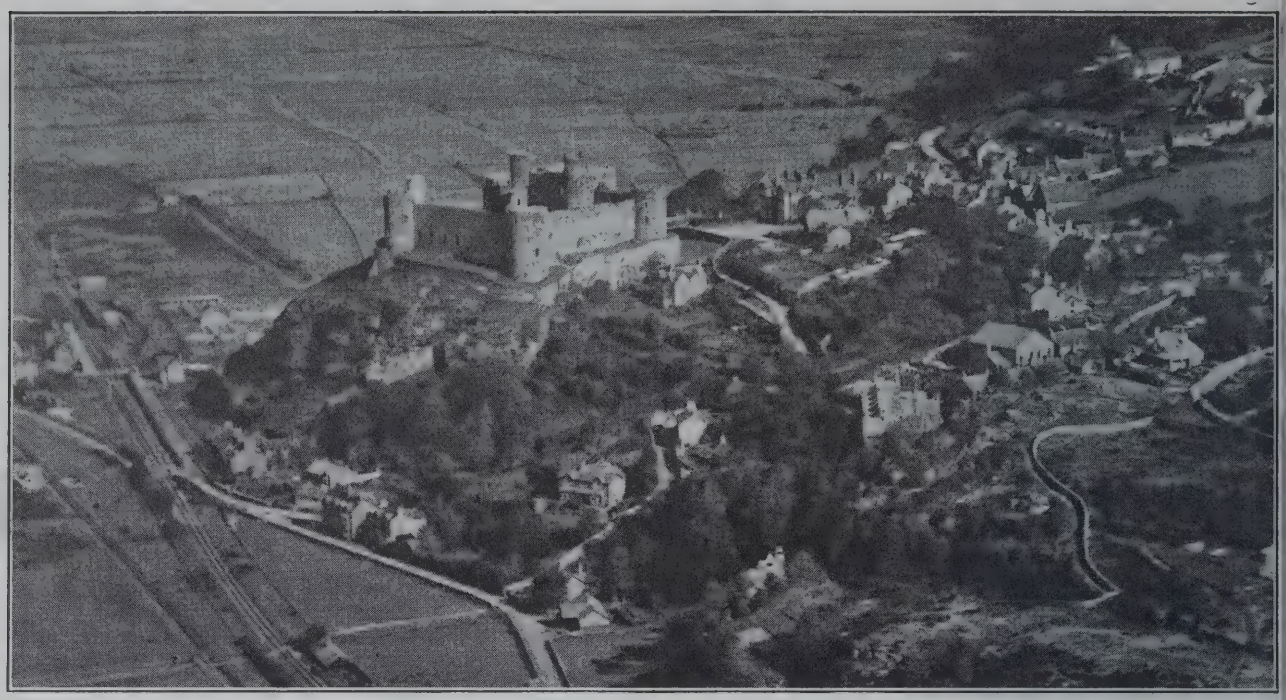
Satisfaction.

Metal Airscrew Company, Ltd.—Satisfaction in full on Mar. 10 1925, of debenture dated Nov. 12, 1924, securing £100 and further advances up to an aggregate of £2,000.



The nose of the Nieuport Delage 42C.1, single-seater fighter The particularly clean lines of the cowling over the 450 h.p Hispano-Suiza twelve-cylinder Vee engine is noteworthy The radiators are of the 1924 Lamblin strut-type. In addition to two fixed Vickers guns mounted in front of the pilot's seat, this machine, in common with all recent French single seater fighters, carries two Darne guns on the wings.


ALL-METAL
AEROPLANES
SEAPLANES &
FLYING-BOATS.
SHORT
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WHITEHALL HOUSE,
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POSITION IS EVERYTHING.—Harlech Castle, a Norman fortress in North Wales, taken by the Surrey Flying Services although never by the Welsh.

Futile Secrecy.

On Mar. 19 a notice was issued by the Press Association requesting that to please the Air Ministry a paragraph which appeared in *The Evening News* the previous day, headed "New Super-Bombing Aeroplane," should not be reproduced.

As THE AEROPLANE does not belong to the Press Association it feels under no obligation to obey this request, more especially as most of the information which was embodied in that paragraph had been published in advance some weeks earlier in an official publication entitled "The Royal Air Force as a Career" (Air Publication 1100), which can be bought for 3s.

Also much information about the machine concerned, which is called the Southampton, has already appeared in the Press. And anyway the Southampton is a modification of the Supermarine Commercial Swan, which, by virtue of its being a commercial machine, is not a secret machine.

The extract from *The Evening News* with the extract from "The Royal Air Force as a Career" appear therefore hereunder.

Extract from "The Evening News," Mar. 18, 1925.

NEW SUPER BOMBING SEA-PLANE.

ABLE TO RIDE AT ANCHOR IN HEAVY WEATHER.

100 *m.p.h. Loaded.*

Constructed to carry a large type of bomb for raids on harbours, ships and objectives near the coast.

Able to ride at anchor in very rough seas or to cruise on the water for days at a time.

Speed of 100 m.p.h. with full load of bombs.

Such are the chief details (writes *The Evening News* Air Correspondent) of a new giant bombing flying boat—a Napier-Supermarine—which has just passed its initial tests at Southampton, and has been flown to the R.A.F. Test Station at Felixstowe. It is called the "Southampton" after its birthplace.

It is a hull-biplane and is driven by two Napier engines developing 1,000 h.p. between them.

The tests have been carried out by Mr. H. C. Biard, who won the Schneider Cup in 1922.

The town of Southampton has presented the Supermarine Aviation Works, where the machine was built, with name plates to be fixed on the hulls of the first twelve machines built.

Extract from "The Royal Air Force as a Career."

(An Official Propagandist Publication.)

"Meanwhile, developments of aircraft by the R.A.F. point to the coming of machines much larger than those now in use. These will be driven by two or more high-powered engines, and will be capable of performing very long flights. In them it will be possible to transport troops, equipment, or bombs over long distances at speeds greater than a hundred miles an hour."

"Large flying boats are being evolved for patrol and reconnaissance duties with the Navy. These will be capable of remaining at sea for several days at a time, and when not required air work will anchor out with t fleet with the crews living abo them."

Naturally one is always concerned, for purely patrio reasons, to keep secret anything which can in any way he the enemies of this country or can affect harmfully the welfa of the Royal Air Force. But when the technical experts the Air Ministry use their little brief authority to hamp the freedom of the press and to hinder the publication news such as helps to advertise British aircraft abroad, wh that news is already common knowledge to all techni people, one feels called upon to expose the ridiculo behaviour of these experts.—C. G. G.

One of the Pioneers.

Those who were concerned with aviation in its very ea days will be interested to hear that Mr. Robert W. A. Brew who was connected with Mr. Grahame White's earliest v tures and later wrote quite a knowledgeable book on flyi particularly in relation to the aero-engines of the period now settled in the United States and is Chief Engineer the Engineers' Development Co., Inc., of 508, Atlantic Bui ing, Philadelphia, Pa., U.S.A.

Mr. Brewer went to America as an inspector of munitio with Capt. Critchley in 1915 and started his present compa about the middle of 1924 to carry on the business of consu ing engineers, specialising in the investigation, developme and supervision of industrial enterprises for investigato At the moment Mr. Brewer is working up adaptations of t Howard Cuff Valve engine and is studying its application aircraft work.

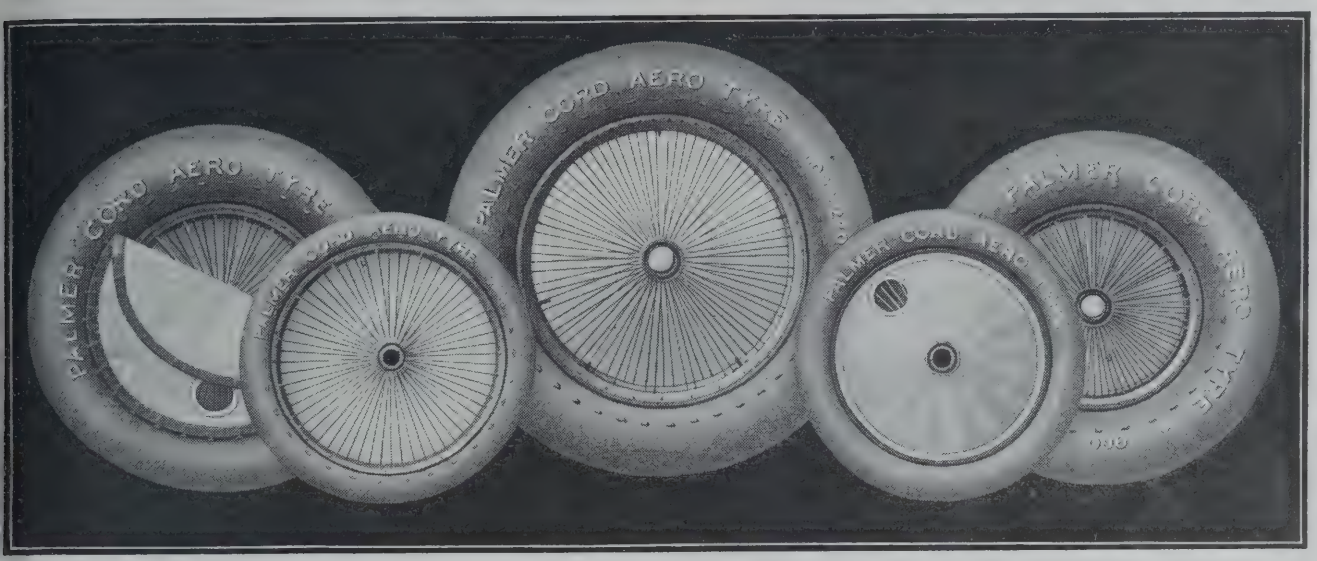
His firm is associated with Mr. Harold F. Pitcairn, t President of the Aero Club of Pennsylvania, which owns t only active local flying field and has a number of commerc aeroplanes. Mr. Pitcairn and Mr. Brewer will be interest to hear from manufacturers in Europe concerning the velopment of light aeroplanes and small engines as they open to purchase some of these for their projects in t States.

MALLITE
IS THE
AERONAUTICAL PLYWOOD
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STRONGER AND MORE DURABLE THAN METAL.
For AERO and SEAPLANES manufactured to the BRITISH AIR MINISTRY SPECIFICATION 2.V.3 by the
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STANDARD SIZES

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×230	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
†Wheel No. 169 is fitted with Ball Bearings.

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PARIS 31, Rue la Boétie.

INK (240)

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 10; Tuesday, 13; Wednesday, 14; Thursday, 12; Friday, 5; Saturday, 11; Sunday, 9.

Imperial Airways, Ltd.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 47, passengers 129, freight 8½ tons.

Air Union:
Paris—London: Machines 16, passengers 51, freight 8 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 11, passengers 20.

Deutscher Aero Lloyd:
Berlin—Amsterdam—London: Machines 0, passengers 0.

Total number of trips by British machines: 47, carrying 129 passengers. Foreign machines: 27, carrying 71 passengers.

Comparative Figures:

For week ending Mar. 22:
Machines 74, Passengers, 200; Crews, 90; Total personnel, 290.

Corresponding week, 1924:
Machines 98; Passengers, 255; Crews, 166; Total personnel, 421.

Corresponding week, 1923.
Machines, 71; Passengers, 234; Crews, 122; Total personnel, 356.

Corresponding week, 1922:
Machines, 50; Passengers, 129; Crews, 84; Total personnel, 213.

Corresponding week, 1921:
Machines, 44; Passengers, 168; Crews, 62; Total personnel, 230.

Croydon Notes.

The first excitement of the week was the arrival of Sir Sefton Brancker, Mr. Alan Cobham and Mr. Elliott on Tuesday, and the D.H.50, from India. A large crowd of those interested in aviation had gathered to meet them. Though they were due at midday it was 13.46 hrs. before the machine arrived owing to their being delayed somewhat by a strong head wind. After being considerably photographed they were all taken off to the Trust House where they were refuelled.

It is very satisfactory to see how everyone at once recognises the wonderful work done on the trip by young Mr. Elliott. He has had little limelight, but most people will agree that a very large proportion of the success of the trip was due to Mr. Elliott's intimate knowledge of his machine and engine and to his own special genius for being able to adapt himself to varying conditions. He seems to be one of those fortunate people who are good at everything they take up. One has no hesitation in predicting a big future for Elliott in aviation

Croydon encountered some curious weather conditions during the week. On Thursday afternoon a thick mist develope in the neighbourhood and incoming machines were unabl to find the aerodrome, even though they flew right over i Mr. George Powell, after flying round for some time, had t land at Kenley, and Lt.-Col. Minchin had to go back t Penshurst. One or two other machines were guided to th aerodrome by rockets. Again, on Saturday morning, M Wilcockson, who was on a test flight, had difficulty in fin ing the aerodrome after going only as far as Mitchar Common.

On that day conditions were extremely varying. M Hinchliffe left for Amsterdam at 08.21 hrs. and managed t get through all right but when Mr. Youell tried half a hour later a snowstorm was in full working order on th Sevenoaks hills and beyond, and he was unable to ge through.

The Air Union have acquired two Renault omnibuses fo conveying passengers between the aerodrome and the centr of London, and these were inspected at the aerodrome o Saturday morning and were much admired.

The Aircraft Disposal Company Ltd. have been testin a Martinsyde with a new radiator during the week, but as is at present too difficult to penetrate the defences of th A.D.C. one is unable to say how this radiator differs fro any others.—G. D.

Press Notice.

The Postmaster-General announces that the letter Air Mails fro London to Hanover and Berlin were resumed on Mar. 13. Th Mails will be closed at the General Post Office, London, at 6.0 a.m each week-day as before, and will be due to reach the Hanov and Berlin Post Offices at about 3.0 p.m. and 5.0 p.m. respectivel the same day. These Mails offer, for express letters, delivery i Hanover and Berlin the same afternoon or evening, and for no express letters accelerated delivery next day at most places i Northern Germany beyond Hanover, e.g., Berlin, Hamburg, Leips and Dresden. The special fee payable in addition to ordinary foreig postage is, as before, 3d. per oz.

The letter Air Mail to Cologne, closed at the General Post Offic London, at 6.45 a.m. each week-day and due at Cologne at abou 3.0 p.m., offers advantage for letters to places in South Germany (a special fee of 3d. per oz.), as well as to places in the occupie areas (at a special fee of 2d. per oz.).

The Aeroplane Album.

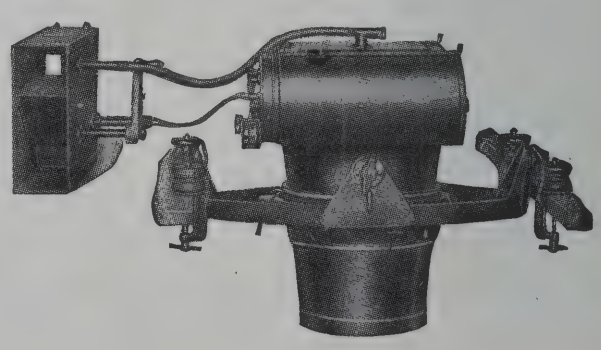
There are still a limited number of copies of the Aeroplan Album of British Aircraft available to those who have no yet acquired copies. This publication, which is produced i the finest photogravure, contains 46 pages of photograph of the most modern British aeroplanes. Copies may be ha for 2s. 6d. post free.

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Metal Propellers, Ltd.

A company has been registered under the title of Metal Propellers, Ltd. The first directors are The Master of Elibank, C. S. Goldman, H. Leitner, M.I.E.E., B. C. L. Jervis, Sir Godfrey Paine, K.C.B., M.V.O., and F. G. W. Pearson. Dr. Watts, who was one of the directors of the band known as Ogilvie and Partners, has joined the firm as Resident Consulting Engineer.

It will be remembered that Mr. Leitner and Dr. Watts were associated in The Metal Airscrew Co., Ltd., which lately built some extremely efficient metal airscrews. Sir Godfrey Paine was also a director of that company so that Metal Propellers, Ltd., would seem to be an expansion of or close relation to the Metal Airscrew Co., Ltd.

One is told that these metal airscrews are extremely popular in Iraq owing to the fact that the pitch is variable and can therefore be altered to suit the different climatic conditions. This has been a great help to heavy machines such as the Vernons and has practically revolutionised the "taking-off" problem. One suggests that further experiments with these airscrews should be made in Civil Aviation where there is so much bother about the "take-off" question.

Soaring Extraordinary.

On Mar. 11 Sergt. Wernert, of the French *Aéronautique Militaire* succeeded in remaining in the air for 9 hours 17 mins. on a Hanriot H.D.14 biplane with his airscrew stationary. This "gliding" or rather "soaring" flight was made at the recently opened gliding school at Istres, where Lieut. Thoret is chief instructor. The previous "record" was held by Lieut. Thoret, with 9 hours 8 mins. Another pupil, Sergt. Antoine, has also succeeded in making a flight of over nine hours.

Prior to making this flight, Sergt. Wernert had made a dual glide with Lieut. Thoret, of 30 mins. and two solo glides of 3 and 3½ mins. and Sergt. Antoine had made two dual glides of 46 mins. and 2 hours 26 mins. respectively, as well as a solo glide of 34 mins.

The big flight of Sergt. Wernert was made with the aid of a mistral and lasted from 09.00 hrs., when he switched off his engine, to 18.17 hrs. when he landed.

Lieut. Thoret, who has specialised in gliding, particularly on engined aircraft with the airscrew stationary, has over 80 hours' flying time in gliding, or rather soaring.

Brussels to the Belgian Congo.

On Mar. 16, the Belgian Ministry of National Defence received the following telegram from Leopoldville concerning Lieut. Thieffry, who, in company with MM. Roger and de Bruycker, is attempting to fly from Brussels to Kinshasa, on a Belgian-built Handley-Page W.8F. (one Rolls-Royce Eagle and two Siddeley Puma engines) :—

According to news received from Ubangi the aeroplane Princess Marie José, piloted by Lieut. Thieffry, having gone out of its course in consequence of the flood in the district of Lake Chad, has landed without accident on the banks of the river Shari, between Fort Lamy and Fort Archambault.

On Mar. 12 Lieut. Thieffry left Fort Lamy, at 06.25 hours, and landed at Fort Archambault at 09.50 hours.

On Mar. 14 he reached Bangui, on the right bank of the Ubangi River, which divides French Equatorial Africa from the Belgian Congo. The machine is being overhauled prior to attempting the last stage of the flight to Kinshasa, a distance of 600 miles over a dense forest.

The British Empire Exhibition.

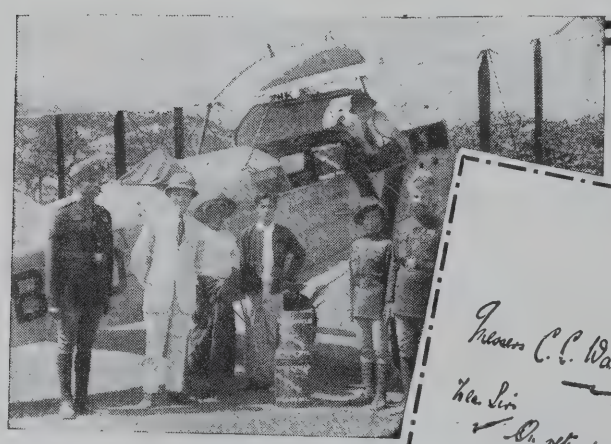
The Committee of Management of the S.B.A.C. has decided not to proceed further with the scheme for a proposed Aircraft Exhibit at Wembley this year. The subject has been gone into with the Air Ministry who were prepared to give financial assistance, but the heavy expenditure which would fall upon the Industry has decided the Committee not to proceed further with the scheme.

Tokio—London.

On May 1 two French-built Bréguet XIX biplanes (400 h.p. Lorraine-Dietrich engines) will leave Tokio in an attempt to fly to Paris and London.

The machines have arrived in Japan and are being erected by the Nakajima Aeroplane Works, who have obtained the building rights for the Bréguet XIX in Japan. They will be three-seaters and are fitted with special fuel tanks of 10-hours' capacity. Each machine will carry one pilot, an engineer, and a representative of the *Asahi Shinbun*, the largest and most popular newspaper in Japan, which is contributing Yen 450,000 towards the cost of the undertaking.

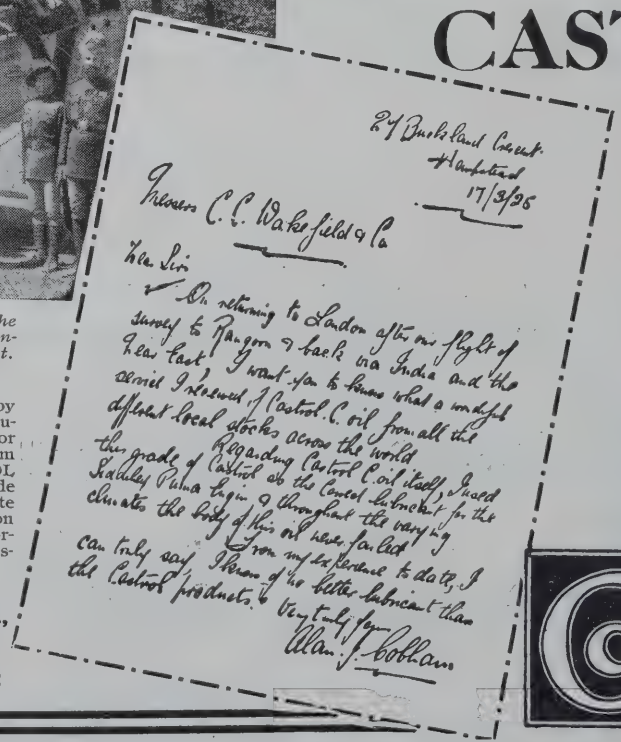
The itinerary, which will follow the trans-Siberian Railway through Korea-Manchuria and Siberia, is as follows :—Tokio — Osaka — Pyongyany — Harbin — Manchouli — Irkutsk — Krasnoyarsk—Omsk—Chelyabinsk—Samara—Moscow — Warsaw—Prague—Paris—London, a total distance of 12,118 kms. It is estimated that the flight will occupy 67 hrs. 25 mins. flying time, spread over 14 days, with a stay of one whole day in Moscow.



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(Watch for Chapter II)

PERSONAL NOTICES.

DEATHS.

DASHWOOD.—On Mar. 21, as the result of a flying accident in Waziristan, Edward John Dashwood, Flg. Off., No. 27 (Bombing) Sqdn., R.A.F.

Mr. Dashwood was posted to No. 27 Sqdn. from No. 5 F.T.S. in December, 1922. He was promoted Flg. Off. at the same time.

DAVY.—On Mar. 17, at Hitchin, as the result of a motor-cycle accident, Corporal Edwin Davy, R.A.F.

HAYTER-HAMES.—On Mar. 21, as the result of a flying accident in Waziristaa, Noel Cecil Hayter-Hames, Flg. Off., No. 27 (Bombing) Sqdn., R.A.F.

Mr. Hayter-Hames was posted to No. 27 Sqdn. direct from Cranwell in March, 1922, and was promoted to Flg. Off. on June 20, 1923. He was a passenger in the D.H.9 flown by Mr. Dashwood.

JACKS.—On Mar. 8, at Nasratabad, Eastern Persia, Wilfred Grey, Acting Manager of the Seistan Branch of the Imperial Persian Bank, Lt., R.A.F., younger son of the late Robert Jacks, Esq., South Shields.

FORTHCOMING MARRIAGE.

CORYTON—HANBURY.—The engagement is announced between Flt. Lt. W. Alec Coryton, M.V.O., D.F.C., R.A.F., youngest son of the late William Coryton, D.L., J.P., of Pentille Castle, East Cornwall, and of Mrs. Coryton, Fursedown, Plympton, and Philippa Dorothea, elder daughter of Mr. and Mrs. Daniel Hanbury, of Castle Malwood, Lyndhurst, Hampshire, and Alassio, Italy.

DORMAN—STEPHENSON.—The marriage which has been arranged between Mr. Geoffrey Dorman and Miss Muriel Stephenson will take place at St. Bartholomew's Church, Sydenham, on April 25 at 2.30 p.m.

HASLAM—CUTHBERT.—The engagement is announced between James Alexander Gordon Haslam, M.C., D.F.C., Flt. Lt., R.A.F., son of the late Mr. and Mrs. John Bailey Haslam, and Helen Kinnear, eldest daughter of the late W. M. Cuthbert, Esq., of Cape Town, South Africa, and of Lady Seymour-Lloyd, and step-daughter of Sir John Seymour-Lloyd, K.C., of Headley Grove, Headley, Surrey.

MARRIAGE.

TOWLER—CRAMPTON.—On Mar. 5, at Holy Trinity Church, Sloane Street, S.W., Flg. Off. Towler, D.S.M., R.A.F., only son of the late Matthew Towler, to Violet L. Crampton, only daughter of the late George Crampton and Mrs. Percival Fowler.

BIRTH.

CHRISTIE.—On Mar. 15, at Vale Cottage, Wendover, to Helen, wife of H. L. Christie—a son.

DARVALL.—On Mar. 18, at a nursing home, Reading, to Aileen, wife of Lawrence Darvall, M.C., R.A.F.—a son.

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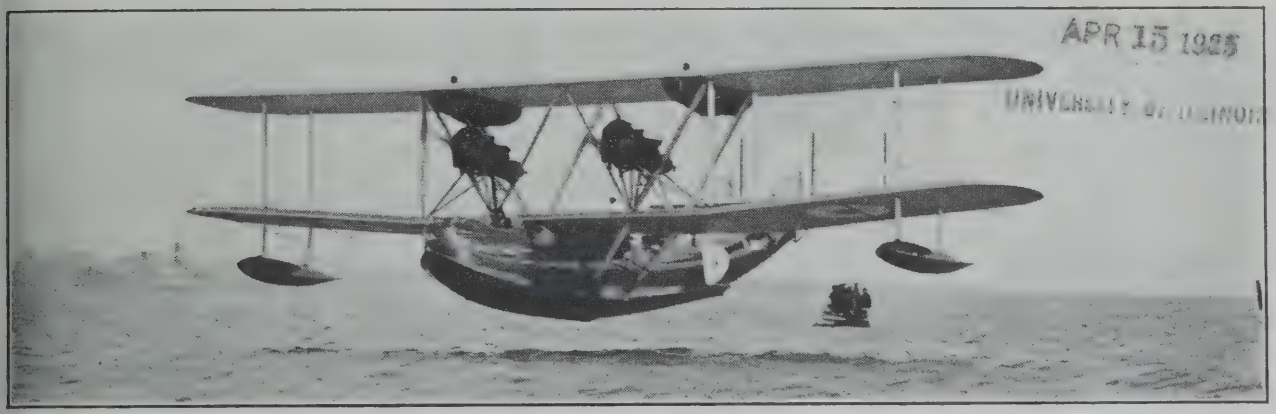
INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXVIII. No. 13. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

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TELL IT NOT IN GATH:—A photograph of the Supermarine Southampton bomber (two Napiers) flying at Southampton on its trials last week. It was about this machine that the Air Ministry reached burble point when a brief and fairly obvious description of it was given in the "Evening News." The machine was designed and built in seven months, was flown for the first time one day, and delivered by air from Southampton to the R.A.F. at Felixstowe the next day.

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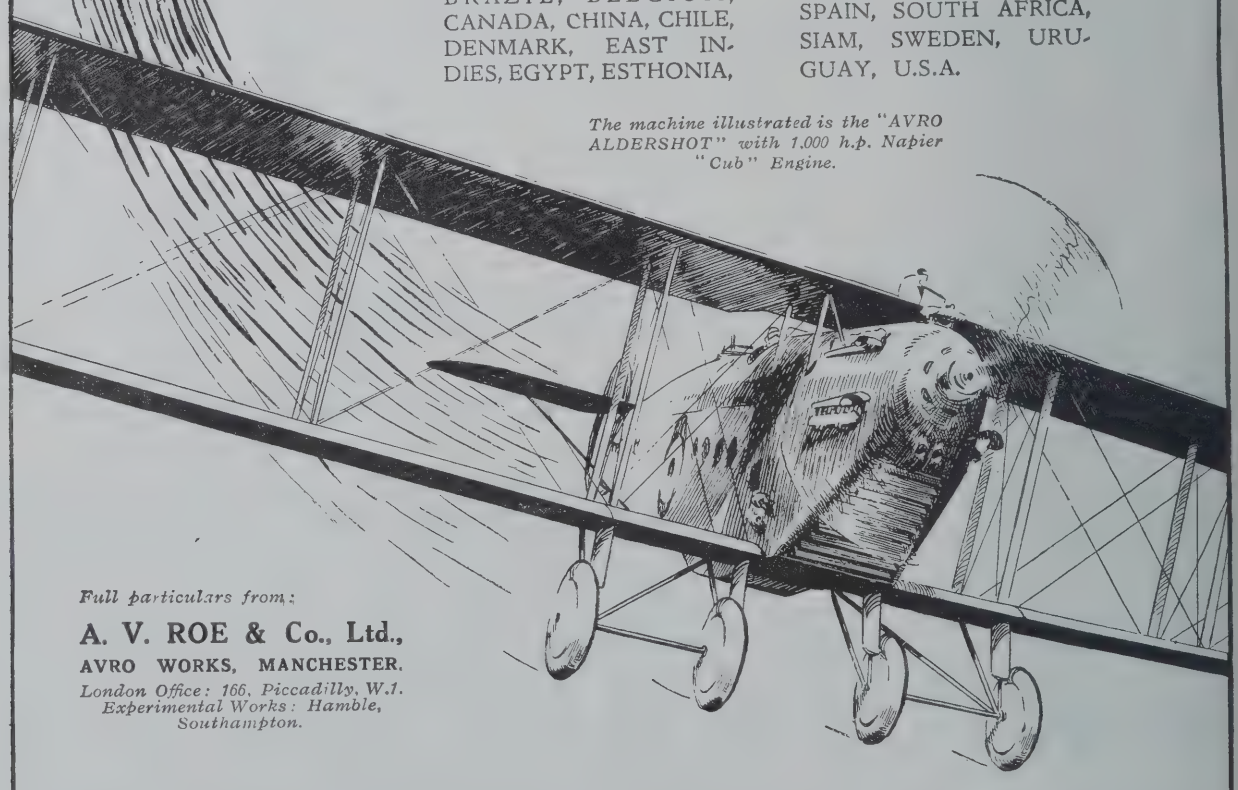
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The machine illustrated is the "AVRO ALDERSHOT" with 1,000 h.p. Napier "Cub" Engine.



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APRIL 1, 1925.

THE AEROPLANE

VOL. XXVIII No. 13.

Incorporating

Aeronautical Engineering

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ON A YEAR OF IMPERIAL AIRWAYS.

Various paragraphs have appeared in the daily press during the past few days intimating that Colonel Frank Searle the Managing Director of Imperial Airways Ltd. had resigned his position. Inquiries at Colonel Searle's office have only obtained the information that he was not there and that his precise whereabouts was unknown. As it is not the custom of Colonel Searle to be away from work or to disappear without trace, as one *spurlos versenkt*, one may assume that the newspaper rumour is at any rate based on fact.

Moreover *The Evening News*, having apparently tracked Colonel Searle to his lair, reported on Mar. 26 that he had said to the representative of that paper that he had no statement of any kind to make. The same paper reported Sir Samuel Instone, one of the Directors of Imperial Airways, as saying: "I am sorry I cannot say anything at all about the matter." If the rumour had been baseless they would certainly have said so.

Even such indefinite statements make fairly obvious the fact that at any rate Colonel Searle is no longer acting as Managing Director of Imperial Airways Ltd. Therefore one feels justified in writing as if Colonel Searle's severance from Imperial Airways Ltd. were accomplished. That being so, one feels that a very grave mistake has been made by somebody somewhere in connection with Imperial Airways Ltd. And as Imperial Airways Ltd. have had allocated to them a million pounds of the money of the British Taxpayer the affairs of the firm are public property and call for public comment such as would be unjustifiable or at any rate impertinent in the case of a private limited company.

Disagreeing Policies.

For some considerable time those who have been more or less familiar with the affairs of our one and only air line have received the impression that there has been a certain amount of friction or at any rate a lack of agreement as to policy between Colonel Searle, the Managing Director of Imperial Airways, and certain other Directors.

The Evening News which appears to have some inside information has stated in effect that whereas Colonel Searle was primarily concerned with promoting progress in commercial flying as such by securing safety first and then high efficiency, other members of the Board, notably Sir Eric Geddes, the Chairman of the Company, were more concerned with trying to attract revenue and cutting down expenses in the hopes of making a commercial success of the business, or at any rate of reducing to a minimum the inevitable loss on the firm's business for the first year or two.

Naturally there are two points of view on such a matter. Doubtless there are those who would characterise as extravagant Colonel Searle's desire for new machines of the latest type fitted with the latest devices, and for maintaining at the highest pitch of efficiency the whole flying organisation of the firm. And doubtless there are others who would call the desire for revenue and for cutting down expenses mere money-grabbing, or spoiling the ship for a ha'porth of tar. There are two sides to every argument and expert witnesses can always be found to lie against one another on almost any subject under the sun. At the same time there are certain incontrovertible facts which lead to the belief that whatever may have been the actual cause of dispute Colonel Searle's policy has been justified by events and that his management of the firm's operations has been thoroughly sound.

Proof by Performance.

To begin with it is just as well to remember that there are very few people in this country or elsewhere who know as much about organising commercial transport as does Colonel Searle, leaving out of consideration all the brilliant organising work which he did in France and England in charge of mechanical vehicles during the War 1914-18.

The London General Omnibus Company is by a very long way the finest transport organisation of its kind in the World and only those who were on the inside of the L.G.O.C. while the old unreliable services of pre-war days were being organised into the present excellent system know how much Colonel Searle had to do with the reorganisation.

After leaving the omnibus business Colonel Searle took hold of the Daimler Hire Service, which one believes was not then a flourishing concern, and so organised it that to-day it is the biggest and best and cheapest motor-car hire system in existence.

While he was still working at the Daimler Hire Service Colonel Searle was induced to take charge of the reorganisation of Air Transport and Travel Ltd. which was financially connected with the Daimler Company. There he introduced ideas which at first made him intensely unpopular with pilots and the ground staff, who had been used to the old more or less haphazard methods of operating aeroplanes.

He argued that the pilots could do more flying without exhausting themselves and that the aeroplanes and engines could do about ten times as much work as they were doing without undue risk through wear and tear. Some of the people concerned regarded him as a more or less polite lunatic but in the end his revolutionary ideas turned out to be perfectly correct. And to-day, whatever its defects may be, Imperial Airways is by far the most efficient air transport concern in the World

Early Troubles.

When The Daimler Airway succeeded Air Transport and Travel Ltd. and Major George Woods Humphery set to work with Colonel Searle to organise the overhauling of engines and aeroplanes and the quick-change system by which a machine came in at night and went out next morning with a fresh engine people began to get some idea of the basic principles of commercial flying.

Naturally neither Colonel Searle nor Major Woods Humphery were popular at first. Then the idea gradually penetrated the brains of the employees that to either of them might be applied to Stalkey and Co.'s remark about their headmaster, the "Prussian" Bates, to the effect that though he was a beast he was at any rate a just beast. And later on when people began to know their two task-masters better they actually became personally popular, except among certain Bolshevistically inclined employees of the type which resents anything in the way of discipline or efficiency.

When Imperial Airways Ltd. came into being on that inauspicious date Apr. 1, 1924, and the four old air lines, The Daimler Airway, Handley Page Transport Ltd., The Instone Air Line Ltd. and the registered but inoperative British Marine Air Navigation Co. Ltd. all became merged in Imperial Airways Ltd. Colonel Searle found himself faced with a strike of pilots in which the ground staff joined. And unfortunately people began to suspect even then that Colonel Searle was not being given the whole-hearted support of all his co-directors. Either jealousy or weakness seemed to prevent some of them from agreeing with his policy.

The strike was like most strikes a purely made-up affair. It was instigated by the aforementioned Bolsheviks who were followed blindly by people employed by the other air lines who did not realise that Daimler Airway efficiency entailed very little more work and offered an opportunity of earning more money. And the strike ended as most strikes do in the strikers losing good wages and only gaining what they might have had by asking for it nicely without striking. But Imperial Airways Ltd. lost not only a great deal of passenger and goods traffic but also lost mileage.

Making up Lost Ground.

Part of the agreement of Imperial Airways Ltd. with the Government was that a certain mileage per annum should be guaranteed. If one recollects rightly the figure mentioned at the beginning as the minimum was a million miles for the first year, but one believes that in view of the strike and the consequent delay in getting going again when the strike was settled the figure agreed, as between the Air Ministry and Imperial Airways Ltd., when work actually began, was 800,000 miles.

Naturally one has not the exact mileage covered since then at one's disposal but a rough estimate based on the number of trips recorded week by week under the heading "Commercial Aeronautics" in The Aeroplane gives one the idea that the total mileage covered cannot be far short of the

desired 800,000 miles and may possibly exceed it. In fact one seems to remember that at the inquest on the victims of the Croydon accident or else in answer to a question in the House of Commons the statement was made that Imperial Airways had in fact covered 800,000 miles since coming into being on Apr. 1 last year.

Perhaps the most remarkable thing about this colossal mileage is the fact that it was done with so few machines. Reckoning up all the old flying stock of the four original companies as one knew them at the beginning of last year there were about sixteen or seventeen machines. Three or four of these were obsolete anyhow. Three, so far as one can remember, have been crashed during the year, the two little Supermarine flying boats at Southampton, though excellent machines of their type, were under-powered for the work they were called upon to do and consequently their total mileage was not very great. Therefore it seems that practically the 800,000 miles must have been covered by eight or nine machines.

Now considering that there was not one really new machine among the whole lot and that some of them were slow old freighters, that performance in itself is a very remarkable achievement and thoroughly justifies all Colonel Searle's estimates which were more or less published when Imperial Airways Ltd. was in process of formation, as well as justifying his much-discussed and somewhat ridiculed policy of intensive flying. Besides which the achievement reflects the greatest credit on the engineering ability and organising power of Major Woods Humphery who has been personally responsible not only for the technical equipment of Imperial Airways Ltd. but also for its business policy at home and abroad.

Pilots and Policy.

Of course the people who are primarily responsible for that mileage are the actual pilots of the air line. And the covering of such enormous mileage on machines entirely unsuited for the job and obviously dangerous to fly with heavy loads, when considered in the light of our modern aerodynamic knowledge, has only been achieved by the skill and pluck of the pilots. And this is exactly where any Board of Directors who happened to have a real working knowledge of their subject would know at the start that Imperial Airways Ltd. could not and never can be a commercial proposition with its present flying equipment.

The position was described in exactly the right words by Mr. Alan Cobham in his notable article which appeared in The Aeroplane last week when he wrote :

"Civil Aviation to-day is being built up too much upon the skill and pluck of pilots, instead of upon the skill of engineers and the reliability of pilots."

There you have the whole gospel of commercial flying. And there also you have the condemnation of any Board of Directors which thinks that it is possible to make Imperial Airways Ltd. or any other air line a commercial proposition by cutting down expense and carrying on with existing aeroplanes. And there also you have the justification of any director who believes that the success of an airway depends on securing flying machines of modern types which will first of all be safe to fly (and so will not depend on the skill and pluck of the pilots) and will be cheap to build and cheap to run.

The Financial Side.

There is no doubt that Imperial Airways Ltd. must have lost money during the past year. But so long as the loss does not exceed the amount of the subsidy received from the Government the Directors ought to congratulate themselves and the Managing Director on having achieved success.

When the subsidy was being discussed it was stated that the total amount was to be a million pounds spread over ten years, starting, if one remembers rightly, with £130,000 or so for the first year and diminishing year by year as it was hoped that more efficient machines and expansion of revenue from passengers and goods would turn the initial losses into a profit.

Therefore so long as the firm's loss for this first year does not exceed £100,000 or thereabouts the management has achieved success. On the other hand, if the loss is anything less than the stipulated £130,000 the management may well be criticised for not having spent up to the limit of the subsidy on new machines of those types now obtainable which make for safety first.

Taking the year's work as a whole, allowing for the evil influence of the pilots' strike at the beginning, allowing for the appalling weather of last year's alleged summer, and allowing for the drop in passenger traffic this year owing to the accident on Christmas Eve, the results achieved by Imperial Airways Ltd. as estimated from the weekly reports published in this paper may justly be regarded as satisfactory.

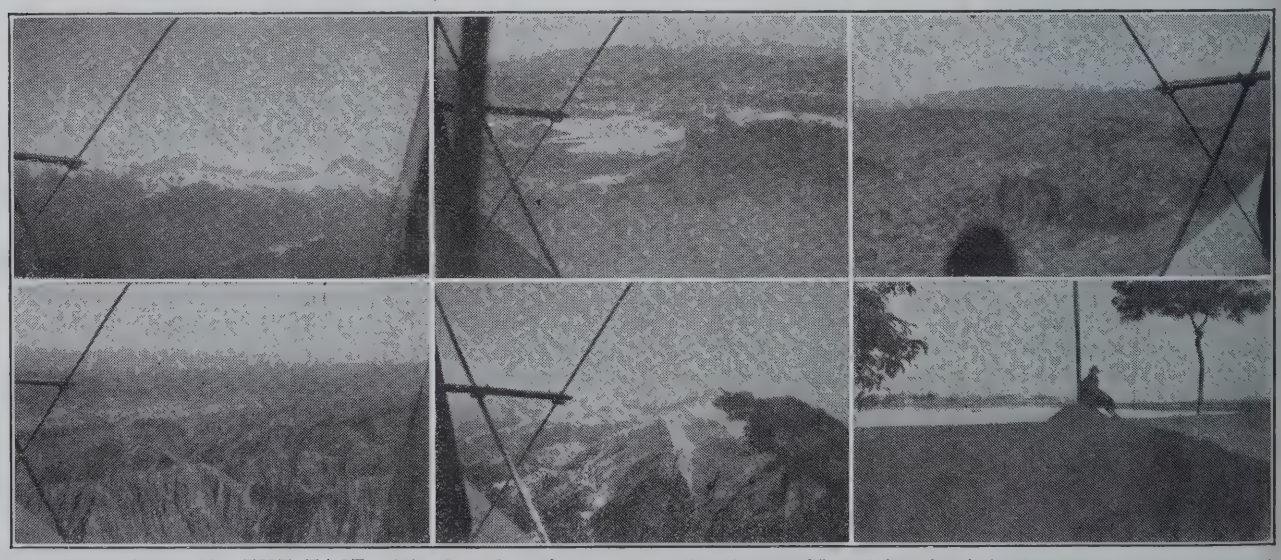
Personally one is of the opinion that the number of passengers might well have been increased by more judicious or more attractive advertising. Judging by the size of the advertisements which one has seen and the class of newspapers in which they have appeared quite a large sum must have been spent on advertising Imperial Airways Ltd. But, having had a good deal to do with advertising in the past twenty years and knowing the arguments which might be set forth in favour of travelling by air and how those arguments might be impressed on potential passengers, one cannot help feeling that by better, or at any rate by different, advertising either more passengers could have been attracted by the same expenditure or the same number of passengers might have been attracted for less money. That of course is purely an expression of personal opinion based on the fact that one has not oneself come across any advertisement of Imperial Airways Ltd. which tempted one to take the air in the firm's vehicles.

Safety and Economy.

All the foregoing facts combine to show that in spite of whatever disagreements there may have been on the Board of Imperial Airways Ltd., the management has done its work very well. And one believes that most people who have real knowledge of the history of Civil Aviation since the Armistice in 1918 will regret very much that Colonel Searle should sever his connection with Imperial Airways Ltd.

No kind of a superman, not even of the most pronounced Lloyd George push-and-go type, could possibly make any airway in a civilised country into a self-supporting dividend-paying business at the present day. The most that anybody could do is to run as economically as possible consistently with securing safety. By sheer good workshop organisation and by good flying on the part of the pilots Imperial Airways Ltd. have achieved a far greater degree of safety than has been achieved anywhere else in the World.

Further safety can only be procured by spending large



THE AIR ROUTE TO THE EAST.—The first five views are of the Taurus Mountains in Asia Minor, and illustrate the impracticability of running a regular commercial route across them. The last snap shows Sir Sefton Brancker in an Indian scene suggesting the line :—"Oh solitude, where are thy charm(er)s?" It is not known what pole it is he has discovered. The photographs were taken by Mr. Elliott on the return flight from Rangoon to London

One Engine: One Aeroplane
17,000 Miles
220 Hours Flying Time

AIR Vice-Marshal Sir W. Sefton Brancker, K.C.B., A.F.C., piloted by Mr. Alan J. Cobham, left Croydon Aerodrome, on November 20th, 1924, on a De Havilland Aeroplane fitted with an Armstrong Siddeley "Puma" Engine, to investigate an Air Route to the East.

They returned to Croydon Aerodrome on March 18th, 1925, having flown over 17,000 miles in 220 hours flying time using only one Aeroplane and one Engine.

The wonderful qualities which have ensured the outstanding reliability of the PUMA Engine are embodied to an even greater extent in the JAGUAR and LYNX Engines—our latest productions.

Extract from the "Times," March 18, 1925.

"Considering the varying conditions under which the machine has been flown since last November, when the flight to India was commenced, the machine is in remarkably good trim, for it showed no signs of the hard wear and tear it must have been subjected to. Actually, since it was built in July, 1923, this particular aeroplane has flown 50,000 miles, the equivalent of twice round the world. It is of the same type as the machines which won the International Traffic Competition at the Gothenburg Exhibition in 1923, and the King's Cup Race round Great Britain last year."

ARMSTRONG SIDDELEY
Aero Engines

ARMSTRONG SIDDELEY MOTORS LIMITED
(Allied with Sir W. G. Armstrong Whitworth & Co., Ltd.)
Works and Aerodrome: WHITLEY, Near Coventry.
London: 10, Old Bond Street, W.1.

Makers also of the famous Armstrong Siddeley Cars.

sums on new machines embodying all the latest improvements. This should be regarded as capital expenditure and should not in any way appear as affecting the profit or loss on the business. Losses can only be diminished or profits earned by spending still more money on trying to discover more economical power-plants and more efficient aeroplanes which will carry bigger loads with less power.

This again entails expenditure of capital. Any policy which seeks to reduce losses by sheer cheese-paring without spending money on new flying stock is not only utterly and entirely wrong from a mere business standpoint but it is definitely harmful to the progress of aviation.

Ever since he first took an interest in Civil Aviation one has discussed these very problems with Colonel Searle from time to time and one knows that his policy at any rate has always been to procure the very best machines and engines of the very latest types. And on every point of policy which he has instituted during his connection with Civil Aviation one has found that Colonel Searle has been right. Therefore one can only regard his departure as being something of the nature of a disaster for Imperial Airways Ltd.

Au Revoir.

One cannot believe that Colonel Searle will definitely sever his connection with Civil Aviation, for he has so often proved his willingness to sacrifice his own personal interests in order to do his best for Civil Aviation. Therefore one hopes that in some way or another his genius for organisation and his keenness for aeronautical progress may be turned to account in some other direction. At the present moment one cannot see an immediate outbreak of air-line company promoting, but such will happen in due course as surely as there was a boom in railway-company promoting in the first half of the nineteenth century. All the great railway lines of to-day have sprung from the amalgamation of small beginnings and there may be somewhere the possibility of starting without too much expenditure of capital new air-lines which may pay their way even without a Government subsidy.

When such an opportunity occurs one would like to see Colonel Searle take it in hand, for one has always disliked the principle of Government subsidies and one still believes in Mr. Churchill's dictum delivered shortly after the end of the War 1914-18 that "Civil Aviation must fly by itself."

When a successful air-line comes into being and is made a paying business it will be a one-man show, organised and run by a man with an intimate knowledge of transport work as such and unhampered by a board of directors who are bound to be influenced by different interests and hindered by a desire for caution at any cost. The running of such a one-man line would be just the opening for a man of Colonel Searle's temperament.

In the meantime one hopes that Imperial Airways Ltd. with the help of the Government subsidy will continue the good work which has been done during the past year. It inherits an excellent organisation and it has in Major Woods Humphery a General Manager who knows just about as much as there is to know about running air transport. If the firm cannot achieve commercial success it can at any rate justify its existence by spreading a knowledge of aviation and by carrying on the good work until genuine commercial flying becomes possible.—C. G. G.

The Britannia Trophy.

The Britannia Trophy which is awarded annually by the Royal Aero Club for the most meritorious flight of the year, has, for the year 1924, been awarded to Wing Cdr. S. J. Goble, C.B.E., D.S.O., D.S.C., and Flt. Lt. I. E. MacIntyre, for their flight round Australia on a Fairey III D seaplane with a Rolls-Royce Eagle VIII engine, which took place during April and May last.

The flight was done without any forward organisation over unexplored territory and through great changes of climate. The machine frequently carried overloads of 500 and 600 lbs. and took off in rough seas under very bad conditions.

Wing Cdr. Goble is now in this country in order to go through a staff course at the R.A.F. Staff College.

Everyone will congratulate Wing Cdr. Goble and Flt. Lt. MacIntyre on being awarded the trophy. At the same time, however, it should be mentioned that there were many people who thought that an individual performance meant a performance by an individual, and are puzzled to know how two aviators can be an individual. Presumably it is the flight which is individual and not the pilot. But if by "individual," one person is intended, then there is something in the suggestion that the Trophy should have gone to Mr. George Powell the famous air-line pilot. Even since 1919 Mr. Powell has been flying regularly (with one short break of a few weeks) on the Continental services, without limelight or publicity. He has, so far as one's memory serves, broken nothing with the exception of turning a Vulcan on its nose three years ago at Brussels and this only happened because the ground was so soft that the wheels sank in the mud, and his landings and "take-offs" are always just as they should be.

The Britannia Trophy is awarded for a performance done and it may be argued that for a pilot to complete a series of flights throughout a year is just as much an individual performance as was the series of flights spread over several weeks which constituted the flight round Australia, or the series of flights which gave the Trophy to Mr. Cobham last year, so Mr. Powell's.

However, none will grudge the Trophy to the two Australian officers, whose performance, it may be remembered, was characterised at the time in this paper as being the best flight ever done up-to-date.

Mr. Alan Cobham's Lectures.

Mr. Alan J. Cobham will give a lecture at the Æolian Hall, London, on Tuesday next, Apr. 7, at 8.30 p.m., on the flight in which he and Mr. Elliott conveyed Sir Sefton Brancker from London to Rangoon and back. Sir Sefton Brancker will be in the chair and about 70 slides will be shown.

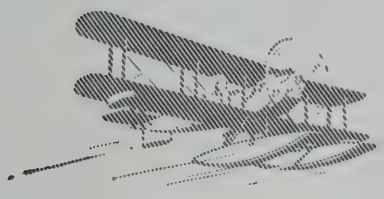
The prices of seats will be 8s. 6d., 5s. 9d., and 3s. Tickets can be obtained from the usual agencies.

On Thursday of this week Mr. Cobham will lecture at Glasgow before the Scottish Section of the Royal Aeronautical Society.



FLYING WELL.—The Supermarine Southampton (two Napiers) flying over Southampton Water. Apart from the triple rudders and the upsweep of the hull to the tail, the machine is not unlike the Swan though technically she does not resemble it in any way.

Vibrationless!



That is one of the features where the Napier "Lion" aero engine is

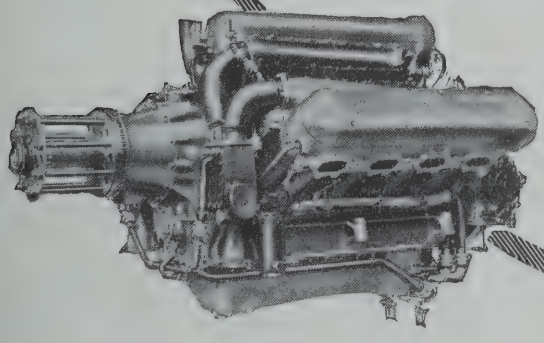
"Without Equal in the World"



THE Napier aero engine is very compactly designed.
Its novel design gives it a particularly short and stiff crankshaft.
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Further, the Napier has been more consistently tried, tested and developed than any other aero engine.
These are some of the reasons why the Napier is so popularly used for Royal Air Force and Commercial purposes, as well as by many Foreign Governments.

Write for complete specification.

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One Napier aero engine on commercial service has covered 140,000 miles (1,400 hours' flying) and is still in daily use. Employ Napier engines and obtain this service.

THE ROYAL AIR FORCE.

The London Gazette.

Mar. 24.

General Duties Branch.—The following are granted perm. comns. as Plt. Offs. with effect from the dates indicated, and with seniority of the dates indicated in brackets :—H. M. Whittle, Mar. 15 (Sept. 15, 1923); J. H. C. Wake, Mar. 17 (Sept. 17, 1923).

Flg. Off. R. F. Browne, D.F.C. (since relinquished his commission), takes rank and precedence as if his appointment as Flg. Off. bore date Aug. 1, 1919, immediately below the name of Flg. Off. D. R. Mitchell, M.B.E., on the gradation list. Reduction to take effect from Feb. 12, 1925.

Flt. Lt. T. H. McDowell is cashiered by sentence of Field General Court-martial (Jan. 16).

Reserve of Air Force Officers.—Flg. Off. J. H. C. Wake resigns his commission (Mar. 17).

Mar. 27.

General Duties Branch.—The following are granted S.S. comns. as Plt. Offs. on probation with effect from and with seniority of, Mar. 14 :—W. H. O. Rumfitt, J. H. Barringer, J. S. Blomfield, E. E. Fallick, A. R. Feather, J. C. McE. Gibb, D. W. Gibbon, F. W. Giveen, C. Heard-White, G. N. Hoar, J. W. M. Nancarrow, V. T. Norwood, A. L. R. Page, L. T. Pankhurst, S. C. Parker, C. H. Roberts (Lt., R.A.R.O., Argyll and Sutherland Hrs.), E. G. H. Russell-Stracey, F. Sisson, R. C. W. Smyth, W. R. J. Spittle, W. L. Spurway, C. Taite, F. B. Tomkins, C. J. Veevers, D. S. E. Vines, P. V. Williams.

The following Lts. are granted temp. comns. as Flg. Offs. on sec. for four years' duty with R.A.F. (Mar. 14) :—C. D. Woodyatt (Northants R.), M. Kortwright (Suff. R.).

Plt. Off. G. Terrell is promoted to rank of Flg. Off. (July 27, 1924); Flg. Off. D. E. Shaw is placed on retired list (Mar. 25). The following are transferred to Reserve, Class A :—Flg. Off. O. D. Freeman (Mar. 22); Flg. Off. E. M. Milling (Mar. 24); Plt. Off. E. V. H. Jarvis (Mar. 25). Flg. Off. E. Cuthbert relinquishes his S.S. comn. on account of ill-health, and is permitted to retain his rank (Mar. 25); Flt. Lt. A. L. Neale, M.C., resigns his perm. comn. (Mar. 25).

The following resign their S.S. comns. :—Plt. Off. A. E. St. G. Gratte (Mar. 18); Plt. Off. on probation R. D. Kerans (Mar. 25).

Stores Branch.—Flg. Off. L. N. Sargent is granted a perm. comn. in rank stated (Mar. 25).

Medical Branch.—Flt. Lt. J. C. Johnson relinquishes his temp. comn. on ceasing to be employed (Mar. 4).

Reserve of Air Force Officers.—A. R. J. Savage is granted a comn. in Class BB, General Duties Branch, as a Plt. Off. on probation (Mar. 24).

Appointments.

Week ending Mar. 30.

General Duties Branch.—Squadron Leader J. C. Slessor, M.C., to No. 4 Sqdn., S. Farnborough, 1/4.

Flight Lieutenants D. W. Grinnel-Milne, M.C., D.F.C., to No. 19 Sqdn., Duxford, 20/3. W. H. Markham, to No. 9 Sqdn., Manston, 23/3. W. N. Plenderleith, to Aeroplane and Arm. Exper. Estab. (No. 15 Sqdn.), Martlesham Heath, 31/3. A. W. Mylne, to H.Q., India, 14/2. E. B. Grenfell, A.F.C., to No. 9 Sqdn., Manston, 30/3. H. W. Evens, to R.A.F. Base, Malta, 7/3.

Flying Officers E. K. Clifford, to R.A.F. Depot on transfer to Home Estab., 12/3. (Hon. Flt. Lt.) L. F. Marson, M.C., to School of Army Co-operation, Old Sarum, 22/3. R. W. Pilling and (Hon. Flt. Lt.) E. H. D. Spence, to Aircraft Depot, India, 5/2. M. M. Freehill, D.F.C., to R.A.F. Depot (Non-effective Pool), 19/3. F. Barnshaw, to I.A.A.D., Henlow, 9/3. P. J. Bett, to R.A.F. Depot on transfer to Home Estab., 2/3. J. F. Mehigan, to School of Photography, S. Farnborough, 6/4. H. C. E. C. P. Dalrymple, to No. 2 Sqdn., Manston, 31/3. T. Fetherstonhaugh, to School of Army Co-operation (No. Sqdn.), Old Sarum, 31/3. J. H. Parry, to No. 99 Sqdn., Bircha Newton, 1/4. M. Kortwright and C. D. Woodyatt, to No. 5 F.T.S Sealand, on appointment to Temp. Comns. on being seconded from t Army, 14/3. The undermentioned Pilot Officers are posted to No. F.T.S., Sealand, on appointment to S.S. Comns. on probatio 14/3 :— W. H. O. Rumpitt, J. H. Barringer, J. S. Blomfield, E. Fallick, A. R. Feather, J. C. McE. Gibb, D. W. Gibbon, F. Giveen, C. Heard-White, G. N. Hoar, J. W. M. Nancarrow, V. Norwood, A. L. R. Page, L. T. Pankhurst, S. C. Parker, C. Roberts, E. G. H. Russell-Stracey, F. Sisson, R. C. W. Smyt W. R. J. Spittle, W. L. Spurway, C. Taite, F. B. Tomkins, C. Veevers, D. S. E. Vines, P. V. Williams. H. M. Whittle, to No. F.T.S., Sealand, on appointment to a Perm. Comn., 15/3. N. Walker, to No. 9 Sqdn., Manston, on appointment to a Perm. Com from Cadet College, 17/3. J. H. C. Wake, to No. 24 Sqdn., Kenle on appointment to a Perm. Comn., 17/3. F. E. R. Dixon, M.C., Aircraft Depot, India, 5/2. J. C. Don, to No. 24 Sqdn., Kenley, 1/ G. H. Loughnan, to School of Army Co-operation (No. 16 Sqdn Old Sarum, 31/3.

Medical Branch.—Flight Lieutenant (Dental) H. J. Higgins, H.Q., Egypt, 28/12. Flying Officer T. W. Wilson, to R.A.F. Depot, 30/ D. B. Smith, M.B., to Research Laboratory and M.O.S. of I., Ham stead, on appointment to a S.S. Comn., for short course, 19/3.

Stores Branch.—Squadron Leaders E. W. Havers, to No. 7 Gro H.Q., Andover, 26/3. J. A. Stone, to I.A.A.D., Henlow, 26/3. Flig Lieutenants K. A. Smith, to R.A.F. Base, Gosport, 23/3. A. Latime to Station H.Q., Bircham Newton, 23/3. Flying Officers H. J. Thoma to No. 4 Stores Depot, Ruislip, 23/3. E. N. D. Worsley, to No. School of T.T. (Boys), Halton, 23/3. R. M. Thomas, to No. 100 Sqdn Spittlegate, 23/3. E. A. Slater, to No. 11 Sqdn., Netheravon, 23/ F. W. van Blommestein, to Electrical and Wireless School, Flowe down, 23/3. J. R. Brown, to I.A.A.D., Henlow, 23/3. S. D. Denn to H.M.S. *Argus*, 7/4.

Accountant Branch.—Flight Lieutenant (Act. Wing-Cdr.) L. Lightfoot, O.B.E., to R.A.F. Depot on transfer to Home Estab., 14/ Flying Officers F. J. S. Short, to No. 1 F.T.S., Netheravon, 20/3. A. Stonehouse, to No. 25 Sqdn., Hawkinge, 20/3.

Fatal R.A.F. Accidents.

Mar. 24.—The Air Ministry regrets to announce that as result of an accident in Waziristan, India, to a D.H.9a No. 27 Squadron, Risalpur, Nowshera, on Mar. 21, 1925, Fl Off. Edward John Dashwood, the pilot of the aircraft, di of injuries and Flg. Off. Noel Cecil Hayter-Hames was kille

Mar. 26.—The Air Ministry regrets to announce that as result of an accident at Caterham to a Snipe machine of N 32 Squadron, Kenley, on Mar. 25, Plt. Off. Ian Malcolm Scot the pilot of the aircraft, was killed.

Air Operations in the Middle East.

A lecture on the Air Force in Iraq was delivered by A Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.C on Mar. 25 at the Royal United Service Institution, Whit hall. Sir Percy Cox, formerly High Commissioner for Ira was in the Chair.

Sir John started by explaining that he was only going describe the situation and operations in Iraq covered by t



THE WINNERS AND THE CUP.—The Flowerdown (Electrical and Wireless School, R.A.F.), which won the R.A.F Rugby Football Cup. A description of the match was published in "The Aeroplane" of Mar. 25. The team were :— AC. Moseley (full-back), Cpl. Wale, Flg. Off. Black, AC. McKay, AC.2. Bass (three-quarters); AC.2. Blennerhassett, AC.1 Kinsman (half-backs); AC.2. Osborne, AC.1. Thompson, AC.2. Sessford, AC.2. Schofield, Sjt. Hester, Cpl. Douglas, Cpl McIndoe, AC.2. Cornish.

The Digby team (runners-up) were :—Plt. Off. A. T. S. Studdert, Sjt. H. Hillsdon, Plt. Off D. S. Green, Sjt. L. S. Snaith Plt. Off. F. H. Farrow, Flt. Lt. E. J. Fogarty, D.F.C., Plt. Off. C. H. Noble, Flt. Lt. R. A. Birkbank D.F.C. (Captain) Plt. Off. N. Howard, Plt. Off. C. H. Flinn, Plt. Off. C. A. Bell, Plt. Off. E. L. Drew L-AC. J. L. Whitt, Cpl. B. Knee, L-AC C. Rose.

FAIREY AIRCRAFT



THE MACHINE IN WHICH THE FLIGHT WAS MADE.

THE BRITANNIA TROPHY FOR 1924

for the most meritorious performance in aeronautics during the year, has been awarded to Wing Commander Goble, C.B.E., D.S.O., D.S.C., and Flight Lieut. McIntyre, C.B.E, A.F.C., for their flight in a FAIREY 3D SEA-PLANE completely round the coast of Australia (8,568 miles in 90 hours). This award confirms the opinion expressed by the public press that this is the

"FINEST FLIGHT IN THE HISTORY OF AVIATION"

THE FAIREY AVIATION CO., LTD.

HAYES, MIDDLESEX, & HAMBLE, NR. SOUTHAMPTON.

Telephone: 136, 7, 8 *Hayes, Middx. Telegrams: "Airily," Hayes, Middx.*

period of his own Command. He would leave it to his successor to describe the subsequent proceedings.

Sir John sketched the policy which led up to the Conference at Cairo in 1921 at which Mr. Winston Churchill produced his scheme for substituting the R.A.F. for the then existing Army Garrison. Although this scheme was regarded with horror by quite well-informed people, Sir John's lecture showed how it was justified.

Describing the operations in Kurdistan, Sir John Salmond gave a *résumé* of his official dispatch, dated May, 1923, the entire text of which was published in The Aeroplane of June 18 and 25, and July 2, 9 and 16, of 1924, under the heading "Control Without Occupation," and will be quite familiar to readers of this paper and therefore need not be repeated here.

The successful operations in the North, in Kurdistan, made such an impression on the various tribes in Iraq, that from July, 1923, until April, 1924, there was only one outbreak in the country. This occurred in the South, in December, 1923, in the Samawah district. The tribesmen in this district, which is about 150 miles N.W. of Basrah, have always been turbulent. The fact that they are good fighters, combined with the inaccessibility of their strongholds, the way to which is made still more difficult by irrigation channels which can only be crossed by pack animals, has caused them to be a constant source of annoyance to the Government of Iraq. This district also practically joins the railway which has been torn up in previous disturbances, making the situation more than ordinarily difficult for the Government.

The 42 sheiks responsible for the disturbance under review were summoned by the High Commissioner to the local seat of Government and only one of them turned up. The R.A.F. were appealed to and trains were despatched the following day with stores, etc. A special target map was prepared. An action took place the following morning and by the afternoon of the next day the sheiks had surrendered.

The operations, which took place 150 miles from Baghdad, were therefore concluded in 2½ days with a total British casualty list of one killed.

Sir John said that air warfare was not humane, but it was quicker and more efficient, and its speed alone acted as a strong deterrent to tribes who would risk punishment likely to be delayed for days or even weeks but would think twice when retribution was only a few hours away.

Sir John considered that the R.A.F. control in Iraq was completely justified to-day by the fact that from a heterogeneous collection of wild and inarticulate tribes had emerged an ordered system of representative government by vote with a legislative Assembly elected by the people themselves.

Boxing.

The Inter-Services Competition.—The results of the inter-Services individual championships at the Stadium Club on Mar. 12 were:—

Fly-weight: A.B. Scarfe (R.N.) beat Cpl. Cox (R.A.F.) on points (Final): Sjt. Haslam beat A.B. Scarfe.

Bantam-weight: AC. Bridge (R.A.F.) beat Lce.-Cpl. Grace (Army) on points. (Final): Cpl. Aguzzi beat AC. Bridge.

Feather-weight: Lce.-Cpl. Johnson (Army) beat L-AC. Boteler (R.A.F.) on points. (Final): Sjt. Richmond beat Lce.-Cpl. Johnson.

Light-weight: Lce.-Cpl. Wigmore (Army) beat Sjt. Stoen (R.A.F.) on points. (Final): Sjt. Viney beat Lce.-Cpl. Wigmore.

Welter-weight: R.S.M. Warwick (Army) beat AC. Cardwell (R.A.F.) in the first round. (Final): R.S.M. Warwick beat Sjt. Langley.

Middle-weight: Gdsman. Steel (Army) beat AC. Marshall (R.A.F.) on points. (Final): Sjt. Crawley beat Gdsman. Steel.

Light-Heavy-weight: Lt. Courtis (Army) beat Flg. Off. Scott (R.A.F.) in the first round. (Final): Cpl. Wheeler beat Lt. Courtis.

Heavy-weight: AC. Rudder (R.A.F.) beat Gdsman. Young (Army) on points. Lt. Lister (Army) beat Flg. Off. Chichester (R.A.F.), the referee stopping the bout in the third round. (Final): Lt. Lister beat AC. Rudder.

A DECK LANDING.

One who is interested in, though not directly concerned with, the subject of deck-flying sends the following graphic account of a recent effort in alighting on one of the Navy's sea-going aerodromes:—

An officer of that Olympian body the Fleet Air Arm one bright morning essayed to land on the *A*——. As he approached the embarrassing proximity of the deck his avion fell out of his hand, striking the edge of the deck, with the direct result that the aircraft was, like Gaul of old, divided into three parts. The major portion remained on deck, the minor descending with astounding velocity onto the Quarter-Deck below, and the oddments falling into the sad sea waves.

Now the minor portion contained the intrepid birdman. On arriving on the Quarter-Deck, all of a heap, the wreckage was immediately surrounded by numerous seamen who smothered the debris and deck with sand, in order that the wonderous surface of the deck might not be sullied by deleterious oils and such-like exudings from the remains. Not until the wreckage was entirely covered in sand did they remove the gallant aviator who, strange to relate was unhurt, except for a slight gravel-rash.

It rather shows their general outlook however. Either they burst on the deck or else fall into what they contemptuously term the "Ditch"—the utter contempt with which they treat the only element that has any use for them, or in which they *can* be of any use, is astounding.

Still, they are a strange and wondrous body and the sooner they are entirely mis-managed by the case-hardened antiquated and moribund body of superannuated sea-dogs at the Admiralty, the better for all concerned. The result ought to be intensely amusing.

ENGINEERS IN THE R.A.F.

The following letter is of more than usual interest in that it is written by a trained engineer with wide experience of Service needs in war and peace:—

Sir,—I have read with considerable interest the leading article on "Engineers in the R.A.F." appearing in your issue of Mar. 25.

It was my privilege at the First Air Conference, held four and a-half years ago, to contribute a few remarks on this identical subject following on a Paper by the Chief of the Air Staff entitled "Aspects of Service Aviation," and the substance of these remarks you were good enough to endorse in your issue of Oct. 27, 1920.

Since that occasion it has always been somewhat of a mystery to me why The Aeroplane, generally the champion of good causes particularly those hard to achieve, has had so little to say on this subject, the vital importance of which no one could over-estimate.

The present state of affairs is lamentable, the result of a short sighted policy of which it would be hard to find a parallel. Conditions seem likely to get worse, and even were it immediately decided to found an Engineering Branch in the R.A.F., it would take years before the full effects of such a wise decision could be felt.

Had the formation of the R.A.F. on Apr. 1, 1918, been this country's first experience of an organised Air Service mistakes would have been more excusable. That this was not the case is well known, in fact I submit that the organisation of the R.N.A.S. prior to the war, which possessed its own Engineering Branch in effect, was basically superior to that of the R.A.F. of to-day.

In The Aeroplane the Admiralty has in recent years been criticised but I am sure it will be admitted that their organisation of an Engineering Branch for the R.N.A.S. was a very wise step as it laid the only true foundation upon which any efficient Air Service should be built.

An Air Service must not of course be rigidly constructed on the lines of the older Services, although it can unquestionably benefit from them, from the Navy in particular, as is pointed out in your article.

The R.A.F. to-day suffers from the fact that its organisation is too much on a parallel with that of the Army of pre-war days, i.e. before Science commenced to play its all-important part.

There are good engineers in the R.A.F., but they are few and far between, and are working with but little encouragement under conditions very far from ideal. They are often not even partially employed on technical duties. In fact their status is not greatly different from that of the engineers to whom you refer in the old-time Navy when steam engines were merely auxiliaries.

It is to be hoped that The Aeroplane will continue to agitate for the early formation of an Engineering Branch in the R.A.F. rendered even more than ever necessary in view of the expansion of the Service.

(Signed) W. Sempill.

[Readers will remember that Colonel the Master of Sempill served in the R.N.A.S. and later in the R.A.F. throughout the War 1914-18. After the War, in 1921, he organised that unofficial Mission composed entirely of R.N.A.S. personnel which laid the foundations of the Japanese Naval Air Service.

The one point on which one disagrees from him is in his reference to the Army of pre-war days. As a matter of fact the Old Army was far more scientific than the Navy. The War Office effort to standardise aircraft before the War though too early to be justified, was actually more on the lines of true engineering than were the haphazard methods of the Navy, even though the Engineer Officers, R.N., who served with the R.N.A.S. did produce better aeroplanes.

What the R.A.F. needs is an engineer branch corresponding exactly to the Corps of Royal Engineers and utterly unlike the Lieutenant (E), R.N., who is not in any way an engineer. The R.A.F. needs more Army organisation rather than less.—C. G. G.]

AIR AFFAIRS IN PARLIAMENT.

THE EXPORT OF AIRCRAFT.

In the House of Commons on Mar. 24, in reply to a question by Lieut.-Col. Heneage, the President of the Board of Trade, Sir J. Cunliffe-Lister, said that the number of aeroplanes of United Kingdom manufacture exported to foreign countries during the year 192 was 137, and during the first two months of 1925, three. The number of airships and balloons of United Kingdom manufacture exported during the same period were one and three respectively.

FOREIGN PILOTS.

In the House of Commons on Mar. 25, in reply to a question by Lieut.-Col. Heneage, the Under-Secretary of State for Air said that the resources of the R.A.F. were available for the training of foreign officers as far as Service requirements permitted and it was the policy of the Air Ministry to encourage the attachment of such officers in suitable cases. Col. Heneage said that in countries whence foreign pilots were encouraged to come a great deal of trade results. Sir J. Sassoon agreed and said that was one of the reasons why we encouraged foreign pilots to come. [But do we?—Ed.]

CIVIL AERODROMES.

In the House of Commons on Mar. 25, in reply to a question by Lieut.-Col. Heneage, the Under-Secretary of State for Air said that it was not desirable for financial and other reasons to provide Government civil aerodromes in advance of the need for them, but the attention of local authorities had been drawn to the desirability of making provision for aerodromes, particularly in connection with town planning schemes.

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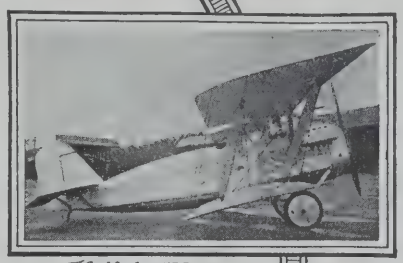


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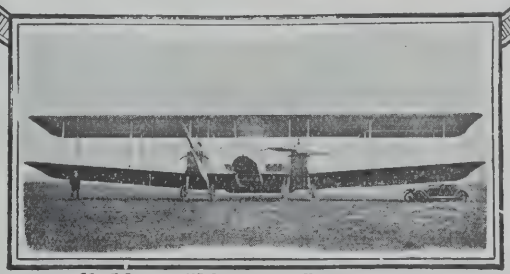
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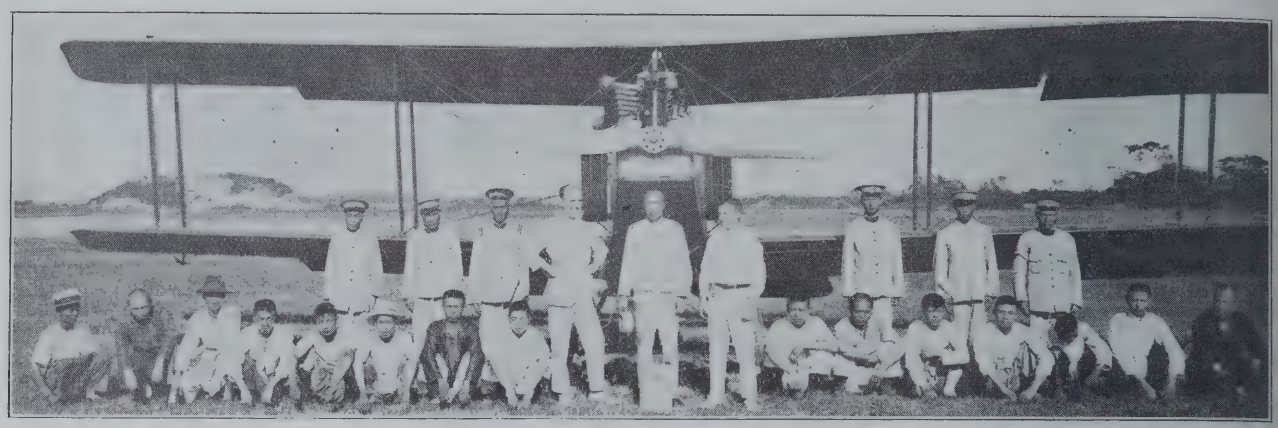
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COMMERCIAL AVIATION IN CHINA.



CHINESE AVIATION.—Herren Fuetterer and Schoettler and their Chinese staff standing in front of the Schoettler I at Lunghwa.

Many efforts have been made to introduce commercial aviation into China but, owing to the lack of finance and co-ordination between the various provinces, nothing has ever got far beyond the initial stages.

On July 1, 1921, the Aeronautical Department inaugurated a service between Peking and Tsinan, a distance of 250 miles, as the first lap in a scheme that was to join Peking and Shanghai, a distance of 900 miles. At the same time a service between Peking and Peitaiho was started. This covered 241 miles, and connected the capital with the coast. The Peking-Shanghai enterprise, however, failed to materialise, and even the trips to Tsinan were abandoned soon after the beginning of the service, partly because of the flooding of the aerodrome in Shantung province, where Tsinan is situated, but mainly owing to financial and other troubles involved in maintenance. Little constructive work has been done since that time, despite the fact that at the aerodrome in Peking there exists, or existed, a full complement of machines for a commercial service.

Apart from financial troubles, the difficulties in launching a paying commercial service in China have been the want of skilled workmen and the lack of adequate repair work. There were no aircraft workshops in the country. If an imported machine was damaged, that is to the extent that a spare part was necessary, it had to remain out of commission until the material had been imported from either Europe or America. Frequently a machine could not be repaired at all owing to the non-existence of experienced aircraft mechanics.

In spite of these difficulties, and undeterred by the failure of other pioneers to build aeroplanes in various military centres in China, Herr E. O. Fuetterer and Herr F. L. Schoettler, two German enthusiasts, embarked on the construction of an aeroplane at Lunghwa—some time during 1922. For over a year Herr Schoettler tested raw materials until he found those necessary for his purpose. At the same time he trained carpenters and fitters along aeronautical lines to assist him. The aim of all investigation was to find materials which would make him independent of foreign material, especially in the matter of woods. As a result of these investigations, three samples of Chinese woods were found that are said to be ideal for the aircraft construction work.

The construction of the machine from these materials was then begun. It was necessarily a slow task. A small foot lathe and one bench-drilling machine composed the machinery at his disposal, while the workmen who handled them were without experience, working in a mat shed without the convenience of a modern factory and without protection against adverse weather.

The result of the work at Lunghwa was the Schoettler I, a two-seater tractor biplane, fitted with the 160 h.p. Mercedes water-cooled engine.

The following is the specification of this machine :—

Wing span, Upper plane 12.04 m.	Dihedral 2°
Wing span, Lower plane 12.04 m.	Gap 1.70 m.
Chord, Upper plane ...1.68 m.	Stagger 0.60 m.
Chord, Lower plane...1.68 m.	Weight empty 741 kgs.
Overall length 8.35 m.	Weight fully loaded 1,160 kgs.
Overall height 3.15 m.	Fuel capacity 4½ hours
Wing area, Upper plane 19.34 sq. m.	Speed at 1,000 ft. height, with full throttle ... 122 m.p.h.
Wing area, Lower plane 18.00 sq. m.	Landing speed ... 45 m.p.h.

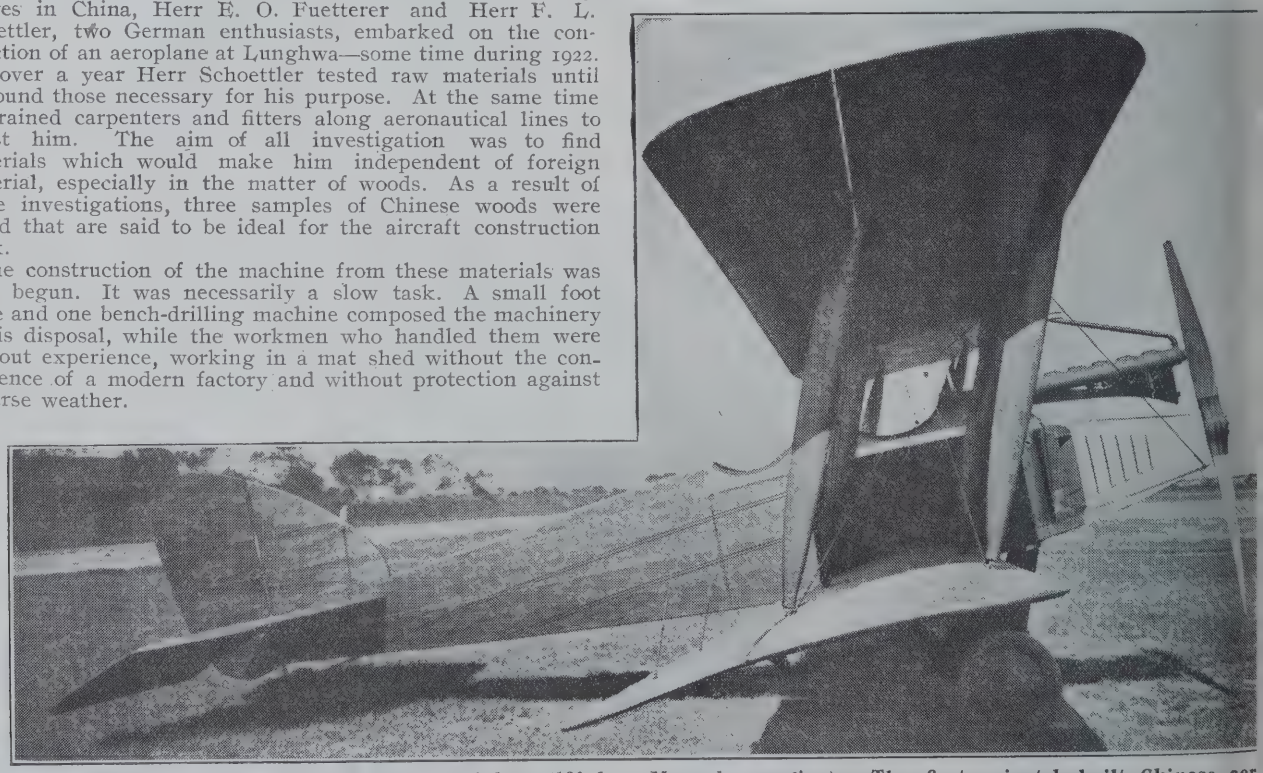
The aeroplane was tested by Major W. E. B. Holland, late of the Royal Air Force, and appended is his report :—

Engine.—160 h.p. Mercedes. Ground revolutions, 1,300. Air revolutions, full throttle, 1,350.

Control.—Lateral control slightly stiff; this would improve by use and suggest balancing the ailerons. Rudder :—Very good. Elevator :—Fully loaded would be very good indeed.

Visibility.—The position of the pilot makes visibility exceptionally good, it is impossible to suggest improvements. The machine flies well, is very well balanced in the air and answers controls cleanly.

Speed.—Air speed obtained, full throttle, at 1,000 feet, 120 miles per hour, but this speed could not be maintained; best cruising speed about 98 miles per hour.



A CHINESE PRODUCT.—The Schoettler I biplane (160 h.p. Mercedes engine). The first privately-built Chinese aeroplane. This machine together with all plant used in its construction were destroyed in the recent internal troubles in China.

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WORLD'S RECORDS

"The following performances set up by Herr Karl Lesch flying the Danish-built Rohrbach all-metal monoplane flying-boat type Ro.II (two 360 h.p. Rolls-Royce Eagle IX Engines) over an observed course at Sund, near Copenhagen, on Oct. 24, 1924, have been homologated by the F.A.I. and are now classed as World's Records:—

Class C bis (seaplanes):—Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h.

Carrying 250 kgs. of useful load:—Distance covered without landing, 1,102 kms. Speed over 100 kms., **159·151** km.p.h. Speed over 200 kms., **158·834** km.p.h. Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h."

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C.P.

Climb.—The machine climbed about 1,000 feet a minute near the ground; was unable to test climb at a height.

Cooling.—The cooling system seems to work very satisfactory but would suggest a larger blow-off.

General remarks.—The machine gives great promise, and if flown from a larger aerodrome could be handled by the average pilot quite successfully. I was very pleased with the machine's general behaviour and look forward to seeing the result of future models. The weight-carrying capacity has been underestimated. Position of observer is such that he can obtain a vision of practically 360° arc.

The foregoing brief description of the Schoettler I has been extracted from a publication issued by the Chinese Government Bureau of Economic Information.

It is interesting to note that this machine was doped with Titanine Dope. In a letter addressed to the Titanine Emallite Ltd. the constructor says:

"As you know, the climate out here is very damp, and aeroplane construction, as far as wood construction is concerned, is a very difficult matter. The same refers much more to dope. If one considers that we had a mat shed only during the time of construction and no special dope room for doping, and that we used *two* coats only instead of four, as we should have done, I think the quality of Titanine Dope speaks for itself."

All-Metal Naval Aircraft in Japan.

The Kawanishi Dockyard of Osaka have obtained the building rights of Dornier aircraft in Japan and the first machine, a Kawanishi-Dornier Wal (two Rolls-Royce Eagle IX engines) was completed in November, 1924. On Dec. 3 this machine, piloted by Herr Yuoest, flew from Kobe to Kasumigaura and back.

The works are now engaged in building various Dornier aircraft such as Libelle, Delphin, Falke and some specially designed military aircraft.

The first Rohrbach Ro. II (two Rolls-Royce Eagle IX engines) of an order of 10 arrived in Japan from Denmark early this year and has shown very satisfactory results in preliminary tests by Japanese Naval test pilots.

A New Fokker Fighter.

It has been reported in a French paper that the Nederlandsche Vlietuigenfabriek (Fokker) is building a single-engined scout to be fitted with the 1,000 h.p. Napier Cub. It is computed that the machine will have a top speed of 280 km. (175 miles) p.h., and that it will be armed with a prodigious number of machine-guns.

Its total weight will be 1,500 kgs., it will be able to carry half a ton of bombs and it will climb to 4,500 m. in 10 mins. with a ceiling of 10,000 m.

French Experimental Orders for Aircraft and Engines.

According to a report prepared by M. Henri Paté, *Deputé de la Seine,* for the Finance Commission of the French Senate, the *Service Technique* placed the following experimental orders for aircraft and engines with the French Aeronautical Industry during 1922-23-24.

Dewoitine: Two twin-engined bombers and one commercial monoplane (450 h.p. Lorraine engine).

Hanriot: One twin-engined military biplane and two H.D.29 engineless aircraft.

Vinot-Deguingand: One single-seater pursuit aeroplane.

Descamps: One two-seater military aircraft, type C.A.N.2.

Schneider: Two twin-engined and two torpedo all-metal aircraft.

Tampier: One *avion-automobile,* one folding-wing aircraft and one type T.6 (550 h.p. Renault).

de Marçay: One type C.A.N.2 (370 h.p. Lorraine engine).

Chantiers de St. Nazaire (Penhöet): One multi-engined high-seas flying boat (1,850 h.p.)

Buscaylet-de Monge: Two thick-wing commercial monoplanes (three 500 h.p. Salmson), and one military aircraft (Fiat engine)

Bréguet: One transport biplane with central engine-room, one type XIX postal aircraft, two two-seater pursuit aircraft, type XXV (430 h.p. Lorraine engines) and two single-seater pursuit aircraft, type XXIV.

S.E.C.M: Two single-engined bombers.

Latham: One high-seas flying boat, type H.R.5.



A CIVIL AEROPLANE.—Two views of the D.H.60 or Moth (60 h.p. Cirrus engine) which give a very good idea of the general appearance of the machine. The strong family resemblance to other D.H. aircraft, noticeably the D.H.51, is apparent.

THE

D·H

"MOTH"

TWO SEATER LIGHT AEROPLANE

27-60 H.P. "CIRRUS" ENGINE.



PERFORMANCE.

Speed at Ground Level	91 m.p.h.
Cruising Speed at 80% full power..	80 m.p.h.
Stalling Speed	40 m.p.h.
Rate of Climb at Ground Level per minute	430 feet
Height Attained at 500 yards from standstill	120 feet
Distance to Unstick (in calm) ..	120 yards
Run on Ground on Landing (in calm)	80 yards
Ceiling (absolute)..	13,000 feet
Range at Cruising Speed ..	4 hours
Petrol Consumption .. per gal.	20 miles
Oil Consumption .. per hour	1 pint

WEIGHTS.

Weight Empty	770 lbs.
,, of Petrol (15 gallons) ..	110 lbs.
,, ,, Oil (1½ gallons)	10 lbs.
,, ,, Pilot	160 lbs.
Normal Useful Load	190 lbs.
†Weight with Normal Full Load ..	1,240 lbs.

† The Certificate of Airworthiness will allow of a maximum permissible fully loaded weight of 1,350 lbs.

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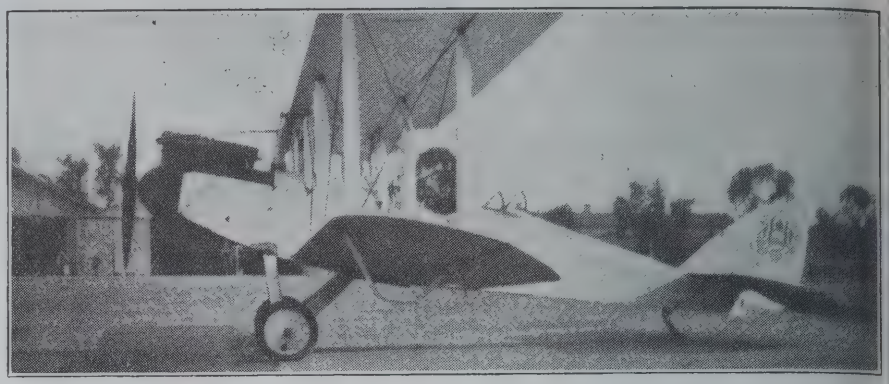
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AIRCRAFT FOR AFGHANISTAN.—

The accompanying illustration shows a D.H.9 bearing the arms of Afghanistan, and representing 25% of the Afghan Air Force. The machine was sold to the Afghan Government by a Capt. Murphy, who is said to be a member of a syndicate which acquired a quantity of D.H.9s and Avros which were presented to the Government of India by the British Government after the War 1914-18. Such information as is available indicates that the Afghans have bought two D.H.9s and two Avros.



Pescara : Three helicopters.
Romano : One 150 h.p. seaplane.
Bernard-Ferbois : Two aeroplanes.
Wibault : Two pursuit two-seaters, type C.2.
Besson : One ship flying boat, type 26 (Lorraine engine).
Salmson : Two Salmson-Bechereau pursuit aircraft (500 h.p. Salmson engines), and one two-seater marine pursuit aircraft (500 h.p. Salmson engine).
Levasseur : One two-seater marine aircraft (450 h.p. Hispano-Suiza engine).
Blériot : Two multi-seater monoplanes, one two-seater marine pursuit aircraft (two 180 h.p. Hispano-Suiza engines).
Villiers : One two-seater marine pursuit aircraft (450 h.p. Hispano-Suiza engine).
Nieuport-Astra : One two-seater marine pursuit aircraft (450 h.p. Hispano-Suiza engine).
C.A.M.S. : Two artillery observation flying boats, types 37 and 37A (one with 450 h.p. Lorraine and one with 450 h.p. Hispano-Suiza engine).
Société Téléméchanique : One pilotless aeroplane.

ENGINES.

Bréguet : Three 450 h.p. and four 950 h.p. Bréguet group-motors.
Wattel : Four aero-engines.
Kornfeld : An element of a turbo-motor.
Lorraine-Dietrich : Ten 550 h.p., five 550 h.p., two-speed, ten 240 h.p. commercial, and six 400 h.p. aero-engines.
Talbot : Three 600 h.p. Talbot-Coatalen aero-engines.
Farman : Six 600 h.p. aero-engines.
Klaguine : Two 450 h.p. aero-engines.
Savathé : Three 650 h.p. Alsace aero-engines.
Odier : Three 300 h.p. turbine-engines.
Gnome-Rhône : Four Bristol engine-starters.
Poberejsky : Twelve jet-propulsion motors.
Caffort : Six 500 h.p. aero-engines.
Laraque : One 25 h.p. experimental turbine.
Delaunay-Belleville : Four 700 h.p. aero-engines.
Blériot : One single-cylinder 40 h.p. experimental aero-engine.
Bugatti : Six 600 h.p. aero-engines.
Noel : One 200 h.p. experimental aero-engine.
Barrière : Two 12 h.p. Vialet engines.
Dronville : One 80 h.p. experimental engine.
Schneider : Six aero-engines of various types.

A New Spanish Military Aeroplane.

The photographs herewith show two views of a new two-seater reconnaissance biplane designed and built by the *Aeronautica Militar Espanola* or Spanish Military Aircraft Works at Cuatro Vientos, near Madrid, for the Spanish Army Air Service. Two specimens have been built and thoroughly tested and as a result a series of twenty have been ordered.

They are known as type A.M.E. and are fitted with the 300 Hispano-Suiza engine. No details of construction or performance are obtainable, but it is known that the total wing area is 38 square metres.

In the photograph of the three-quarter rear view it will be seen that the machine is arranged as a single-seater by having the back seat cowled in, but as reconnaissance aircraft this seat will be equipped with a gun-ring for either one or two Lewis guns.

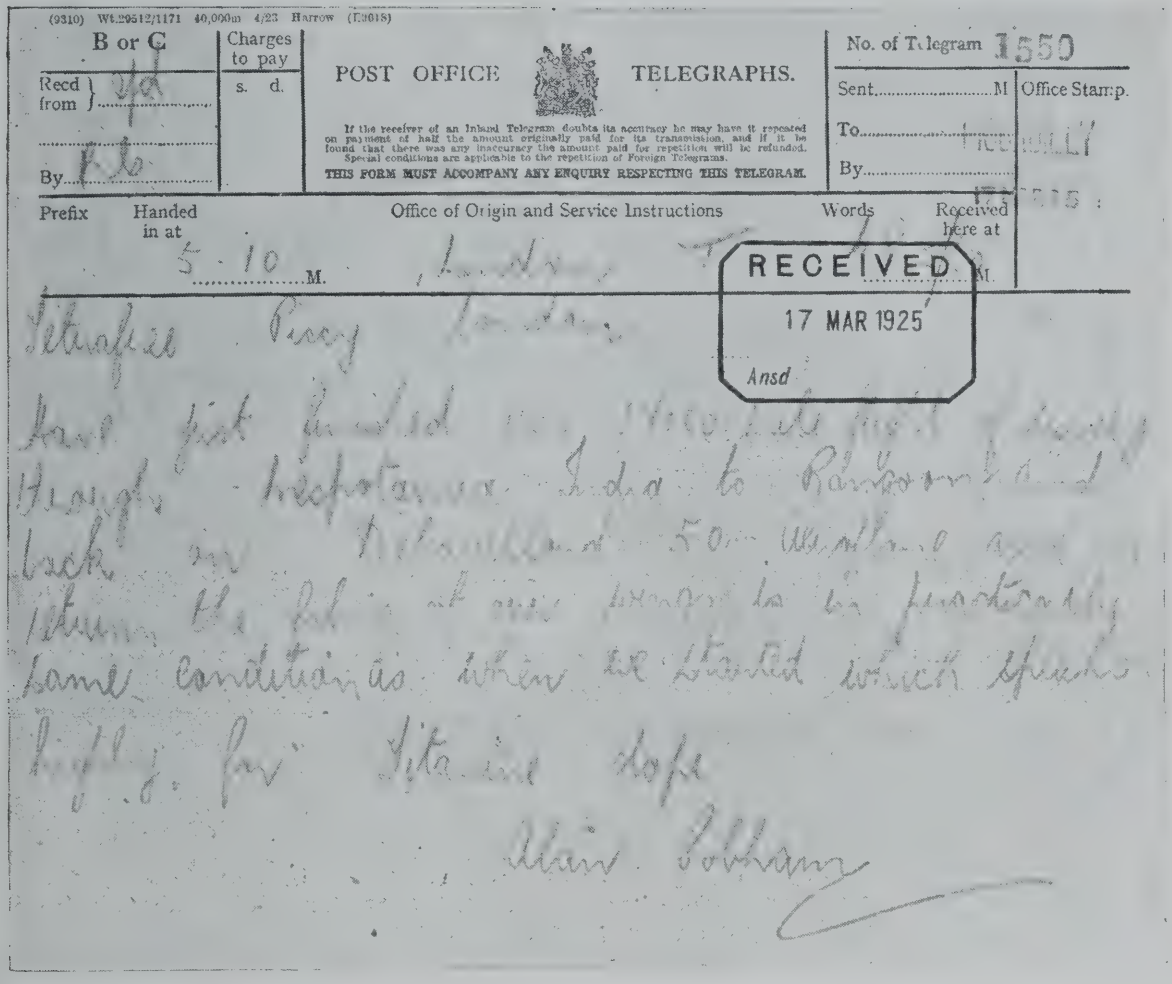


A SPANISH FIGHTER.—Three-quarter front and rear views of the A.M.E. reconnaissance biplane (300 h.p. Hispano-Suiza engine) built by the Spanish Military Aircraft Works at Cuatro Vientos, Madrid.

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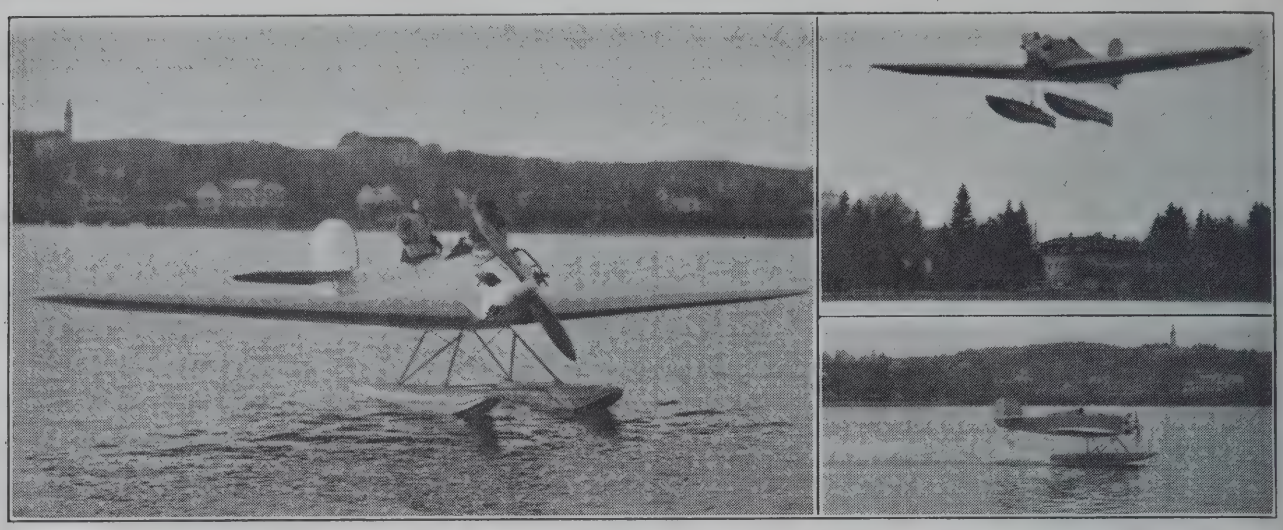
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A LIGHT SEAPLANE.—The Udet U.10 seaplane (55/60 h.p. Siemens-Halske radial engine) shown on the water, flying and taking-off.

The Udet U.10 Seaplane.

The Udet Flugzeugbau G.M.B.H., of München-Ramersdorf, have just produced the U.10 seaplane, which is shown in the accompanying illustrations.

It is evolved from the U.10 land machine, the new float gear being made interchangeable with the normal land undercarriage. The twin floats are of typical German aspect and are of metal construction.

On test the U.10 has unstuck in 12-15 seconds with pilot only, and with full load it has got off the water in 30-35 seconds.

SPECIFICATION.

Span	10.6 m.	Weight empty	370 kgs.
Length	5.9 m.	Useful load	200 kgs.
Length of floats	3.9 m.	Weight loaded	570 kgs.
Chord	1.7 m.	Speed, max.	140 km.p.h.
Area of wings	14 m².		

Our Experts.

[The following letter from an engineer who is also a scientist will be found to be of unusual interest. One may add that the writer of the letter did very valuable experimental work in the R.F.C. and R.A.F. during the War 1914-18, and his demobilisation after the War deprived the Air Force of an officer who would have been of high value in the Technical Department.—C. G. G.]

I have been reading with very much interest your articles on the R.A.E. and the supply of aeronautical apparatus and machines. You hit the nail on the head very truly, as my own experience shows. Having had charge of two important departments concerned with aeronautical apparatus for the Service, I can state that at least three-quarters of the experimental and research work which is being carried out by the Engine, Instrument, Photography, and Wireless Departments at R.A.E. could be done much more expeditiously and ten times more economically by private firms outside.

It is not realised by the Air Ministry that they cannot create the type of expert which most of the leading scientific apparatus manufacturers possess from the raw type of college and university student or the individual—of which, unfortunately, there is a fairly good sprinkling at Farnborough and Air Ministry—who has been levered into his job purely by personal influence, or by length of service, but who possesses no technical qualifications whatever.

Your recent remarks in THE AEROPLANE concerning the advertised appointments for, I think, the Engine Department at the R.A.E., when Hons. B.Sc. men were offered dustmen's wages, were very appropriate. I think that the humour of the situation lies in the fact that a number of the present staff of the R.A.E. who are holding the best appointments, possess *no degrees* or recognised *qualifications* whatever.

Most of them have grown or "vegetated" in their jobs, limpet-fashion, and have gained their present knowledge purely by association—not on any sound technical basis. I think that if questionnaires were circulated and the results published you would find that a fair number of the Staff there are not technically qualified for their jobs. Most of the good men are outside.

B. and P.'s in Australia.

It will be remembered that shortly after the War Boulton and Paul Ltd. of Norwich produced an excellent little biplane designed by Mr. J. D. North known as the P.9, which, fitted with a 90 h.p. Raf. engine, looked very like being what was wanted as a commercial aeroplane. Two of them were flown in the King's Cup Race in 1922, one by Mr. Frank Courtney and the other by Lieut.-Colonel Tennant, and both put up very good performances. Unfortunately the type was in front of its time and the price was high as compared with what commercial machines must be in future and so the output of the type was small. However three of them were supplied to Australian buyers through the late Capt. A. D. Lang. The last of these machines was delivered in November, 1920, and since then little has been heard of them until the other day Boulton and Paul Ltd. received a letter which reads as follows :—

From :—Howard Jolley,
The "New Era" Insurance Co. of Aust. Ltd.,
275, Collins Street,
Melbourne. 16/1/25.

Gentlemen,

Have had three Boulton and Paul Aeroplanes, two of which are on the scrap heap result of crashes and the third is still going strong and a most suitable bus for my touring work. I happen to be the only commercial man in Australia using an aeroplane as a means of getting over the country landing in farm paddocks and writing Insurances. My flying and the notoriety I have gained has given me a wonderful reputation and made business very easy to write.

On the 9th June, 1923, I won the Herald Newspapers Aerial Derby of £50 and Silver Cup over a distance of 100 miles, being handicapped 38 minutes behind scratch. Other machines competing were 110 Avro, 90 Sopwith Dove, Sopwith Pup, and 2 Sporting Farmans and the B.P. cleaned the lot up. Happy to receive any of your literature at any time.

Have survived ten crashes—some record. HOWARD JOLLEY.

It is very interesting to see that a five-year-old machine should have put up such an excellent performance. One hopes that some day Boulton and Paul Ltd. will find it possible to produce an all-steel aeroplane at a price within reach of people abroad who want to use aeroplanes for commercial purposes as does Mr. Jolley.

Supercharging and Col. Fell's Paper.

The following letter has been received :—

Sir,—The ways of the Powers that Be are truly marvellous. In the Summer of 1917 the idea of supercharging aero-engines for altitude work occurred to me and I made efforts (in the R.N.A.S.) to have it tested as it seemed to offer a means of shortening the War. The inertia of those who ought to have moved was so great however that no velocity ever became measureable. In the seven or more years which have elapsed since then the idea seems to have gathered a certain amount of momentum, with the result that Col. Fell wants to complicate light 'plane engines by fitting them with superchargers though he admits that reliability, easy maintenance, long life, and cheapness are essentials—i.e., simplicity. It seems obvious that the supercharging of racing cars to which he refers is purely to get round the capacity rating—which he condemns in light planes.

The fact that the Powers that Be would like to fit superchargers to "hedge-hopping" aeroplanes instead of to machines for high flying seems to show that the sign of the seven years' momentum is negative and that officialdom is running backwards (if it is capable of such rapid movement at all).

If the Technical Department of the Air Ministry could only be fitted with a supercharger so as either to increase vastly its output of useful contribution to the progress of aeronautics, or (preferably) to increase its revs. so much that it disintegrated entirely and left those with the necessary enthusiasm free to use their brains for the benefit of civilisation, the serviceable light aeroplane would probably be very much nearer than it appears to be to-day.

Regarding the defining of a light 'plane, might I suggest that if this be really necessary at all at present it might be advisable to lay down a maximum permissible landing speed? One of the main advantages of the type is its safety, owing to low landing speed, and if a definition be either by capacity or weight, or even by both, it will include fast landing machines on which serious crashes will be much more frequent and will spoil the reputation for safety which the slow landing machines should otherwise quickly obtain.

(Signed) W. E. GRAY.

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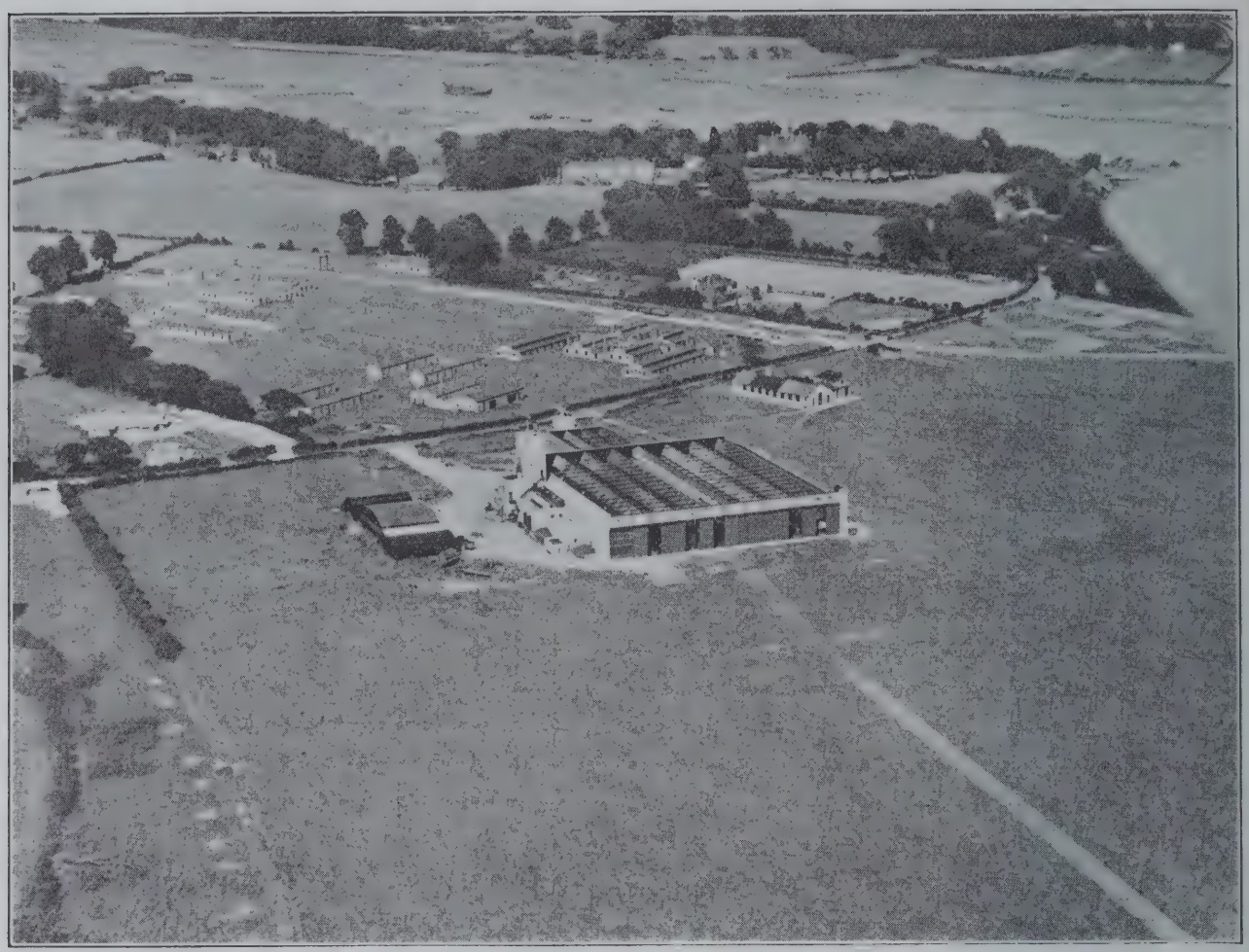
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FROM THE AIR.—The experimental factory and aerodrome at Hamble of A. V. Roe and Co. Ltd. taken from an Avro by the Surrey Flying Services. The big erecting shop with its tower is seen in the centre. The track by which seaplanes are brought to Southampton Water (which is just off the bottom of the picture) can be seen running from the shed to the right-hand bottom corner. The canteen can be seen to the right of and behind the big shed. The Hamble river is in the background.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 12; Wednesday, 14; Thursday, 14; Friday, 14; Saturday, 17; Sunday, 6.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 52, passengers 160, freight 8½ tons.

AIR UNION:
Paris—London: Machines 22, passengers 67, freight 6½ tons.

K.L.M:
Amsterdam—Rotterdam—London: Machines 12, passengers 26.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 3, passengers 6.

Total number of trips by British machines: 52, carrying 160 passengers. Foreign machines: 37, carrying 99 passengers.

Comparative Figures:

For week ending Mar. 29:
Machines, 89; Passengers, 259; Crews, 105; Total personnel, 364.

Corresponding week, 1924:
Machines, 58; Passengers, 134; Crews, 100; Total personnel, 234.

Corresponding week, 1923:
Machines, 85; Passengers, 371; Crews, 156; Total personnel, 527.

Corresponding week, 1922:
Machines, 66; Passengers, 177; Crews, 105; Total personnel, 282.

Corresponding week, 1921:
Machines, 48; Passengers, 162; Crews, 60; Total personnel, 222.

Croydon Notes.

This week Imperial Airways, which was formed on Apr. 1 last year, completes the first year of its somewhat chequered existence. So far there would appear to be more retrogression than progression. Only one new type of machine has been put onto the service and that is merely a modification of a 1919 design. Altogether the less said about the policy of Imperial Airways Ltd. in its first year the better. It is not a record of which the Chairman and Directors need be proud. On the other hand, the feats performed by the pilots and the work done by the Management in keeping things going with obsolescent flying stock deserves the highest praise.

Last week one took the name of Mr. George Powell in vain and said that he was unable to find Croydon Aerodrome one misty day. As a matter of fact it was not Mr. Powell but another pilot who could not find the aerodrome. Mr. Powell on that particular day was "shot down" by wireless at Lympne.

The Fokker F.VII on Saturday morning made rather an impressive get-away. There was no wind at all and she had two passengers and quite a heavy load of freight. The pilot, M. Smirnoff, opened up the engine, facing from the Custom House out into the aerodrome, the tail came straight off the ground, and she was in the air before she reached the end of the tarmac run. It was a very pretty piece of work. And every passenger-carrying aeroplane ought to be able to do the same thing on a calm day.

One of the D.H.34s, G-EBBW, was somewhat damaged on Friday. The machine has been freshly overhauled. Mr. Wolley Dod took her from Croydon to Amsterdam and then went on from Amsterdam to Cologne. On this leg he had to make a forced landing and the machine unfortunately stood on its nose owing to having to land on bad ground.

It is stated that the Bréguet Leviathan is to be run on the London-Paris service for the Section Technique for a month

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by way of getting data as to its performance under commercial conditions. Presumably this will be the machine fitted with four 250 h.p. Lorraine engines.

At the Disposal Company Mr. Perry was testing a D.H.9, but of what is going on inside the sheds one does not know.—G. D.

Northern Air Lines Ltd.

Northern Air Lines Ltd. started operations on Mar. 17 between Stranraer and Belfast. In spite of bad weather conditions they have made the return flight to schedule ever since, with exception of Sundays, for which days so far no service has been arranged.

Mr. R. H. MacIntosh is the chief pilot, and D.H.9s and a D.H.5o are being used. The average time for each trip has been about 30 minutes and machines have got off with commendable promptitude, reminiscent of the good old Airco days.

Northern Air Lines Ltd. does not receive a halfpenny of Government subsidy. Much of the capital has been obtained in Belfast. Therefore all the more will people desire to see success come to this organisation, of which Mr. D. M. Greig is the moving spirit. And be it said in this case, he is a moving spirit which moves in the right direction, that is to say forward.

The Wilbur Wright Lecture.

" The 13th Wilbur Wright Memorial Lecture will take place in the Library at 7, Albemarle Street at 8.30 p.m. on Thursday, April 30th, when Rear-Admiral D. W. Taylor, of the American National Advisory Committee for Aeronautics, will read a paper on 'Some Aspects of the Comparison of Model and Full-Scale Tests.' "

The foregoing paragraph issued by the Royal Aeronautical Society discloses the lamentable state into which that Society has been allowed to lapse by incompetent handling.

The Wilbur Wright Memorial Lecture ought properly speaking to be the greatest aeronautical discourse of the year and ought to be made to attract the largest audience. Properly managed it could be made the occasion for the most important annual social function of the scientific and technical side of British aviation.

If the Council of the R.Ae.S. knew its job the Wilbur Wright Lecture would be associated with a conversazione to which would be drawn not only all the important people in aviation but the leading scientists and technical people of all the industries associated with aviation.

There was a time in the early days when the Aeronautical Society, not yet Royal, was able to get together quite respectable audiences at its lectures. And at the social functions which it then organised one met everybody who was anybody in the aeronautical community. Nothing in the recent development of aviation is more regrettable than the way in which the oldest aeronautical society in the World has been allowed to become practically a nonenity so far as the history and progress of aviation are concerned.

Doubtless the excuse of the Council for their inactivity will be that the Society cannot afford to run a big event of any kind. If the Society is without funds then it is entirely owing to the incompetence of the Council, for there is no doubt that if energetically handled the Society could bring within its membership everybody of any kind who is concerned with aeronautics. And certainly the great manufacturing firms would willingly support the Society in any activity which might be for the good of aeronautics.

One can only say that the holding of the Wilbur Wright Lecture in the inconsiderable room which is dignified by the name of the Library of the Royal Aeronautical Society is an insult to the memory of that great pioneer Wilbur Wright.—C. G. G.

International Air Races.

On Mar. 27 the Royal Aero Club cabled to Washington entering their challenge for the Schneider International Seaplane Race to be held at Baltimore in October next. The Club also cabled to Brussels entering three challengers for the Gordon-Bennett Balloon Race to be held at Brussels in June.

The South African Air Mail.

According to *The Times*, the South African Government has received offers from two British, one Dutch and one German aviation firms to assist in the aerial development of the Union.

One Continental firm offers to run a service in South Africa for a short period with its own machines purely on the strength of what may happen after it has shown what it can do, and a British firm has submitted a most complete and detailed scheme for running the present service, describing the route almost mile by mile, and giving a more detailed report on the weather along the coast than is obtainable in the Union itself. In short, they have gone to extraordinary trouble and expense to make their offer attractive. This firm actually telegraphed its congratulations to the existing service on the completion of the first flight. All offers are being carefully considered, and there will be much discussio yet before anything is decided.

If it is decided that passengers can be taken by the preser air mail machines the fare between Durban and Cape Tow will be £15, which represents a rate of 4d. a mile.

The Royal Aeronautical Society.

At the Council Meeting of the Royal Aeronautical Societ held on Mar. 31, 1925, the following Members were electe to the ten vacancies :—

(1) Wing Cdr. T. R. Cave-Browne-Cave, (2) Sir Mitchell I Chalmers, (3) Mr. C. R. Fairey, (4) Mr. R. H. Mayo, (5) Lieut Col. Mervyn O'Gorman, (6) Colonel the Master of Sempil (7) Mr. T. O. M. Sopwith, (8) Mr. Clifford W. Tinson, (9) M H. T. Vane, and (10) Sir Henry White Smith.

It is interesting to note that, of the Members elected in 1923, o of a possible 22 Council Meetings the following attendances were r corded :—Prof. L. Bairstow, 13; Wing-Cdr. T. R. Cave-Browne-Cave, 1 Sir M. D. Chalmers, 21; Mr. C. R. Fairey, 4; Lieut.-Col. J. T. C. Moor Brabazon, 1; Lieut.-Col. Mervyn O'Gorman, 16; Mr. J. L. Pritchar 13; Col. the Master of Sempill, 19; Mr. R. V. Southwell, 15; and Co H. T. Tizard, 14.

Of the Members elected in 1924, out of a possible 11 attendances th following were recorded :—Sir W. S. Brancker, 5; Mr. Griffith Brewe 10; Mr. C. F. Jenkin, 1; Prof. A. R. Low, 9; Mr. W. O. Manning, Mr. J. D. North, 1; Col. A. Ogilvie, 5; Sir Napier Shaw, 5; Mr. H. I Wimperis, 9; and Mr. R. McKinnon Wood, 8.

From these figures readers can judge the amount of a tention which each Member of Council has given to th Society. The new or re-elected Council includes the name of several members who can, if they will spare the time an energy, instil new life into this apparently moribund Society One hopes that they will do so.—C. G. G.

An Airship Committee.

The Air Ministry announces that a special sub-committe of the Aeronautical Research Committee has been appointed t act as a co-ordinating technical body on airships.

The Committee will keep in touch with developments i design and with the research and experimental work initiate both by the Airship Guarantee Company and the Royal Ai ship Works, and consider and report to the Air Council o any design research and experimental questions that may b referred to them, whether arising at the Royal Airship Work or in connection with the Airship Guarantee Company's cor tract.

The composition of the Committee will be :—Prof. L. Bai stow, C.B.E., F.R.S., Zaharoff Professor of Aeronautics i the University of London; Mr. R. V. Southwell, Superi

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tendent of the Aerodynamics Dept. of the National Physical Laboratory; and Mr. H. T. Tizard, A.F.C., Principal Assistant Secretary, Dept. of Scientific and Industrial Research.

Amphibian Figures.

In a recent note on the Loening amphibian biplane with the inverted Liberty engine it was stated that the weight light was 3,300 lbs. and the weight loaded 4,000 lbs., thus indicating that the useful load was only 700 lbs. The figures came from the United States and naturally were accepted without question.

Now however one is happy to learn from the Loening Aeronautical Engineering Corporation that as a matter of fact the machine fully loaded weighs 5,000 lbs. and at that weight has the performance of an ordinary standard D.H.4 with the Liberty engine which is the standard general purpose machine in the U.S. Army. Thus it may be seen that the Loening amphibian carries 1,700 lbs. of useful load, which is quite a good load for any type of machine and is especially so for an amphibian. Moreover the Loening Corporation state that when used for ordinary commercial purposes the machine can carry more than the figure indicated, the commercial load being actually 2,000 lbs.

From this it may be gathered that the machine is quite a useful proposition for genuine trans-Continental air line work in which aircraft may have to pass over wooded or mountainous country where the only possible alighting space may be a river or a lake.

One awaits with interest general arrangement drawings and full specifications and performance figures for this machine, which personally one regards as being a noteworthy step towards the production of the ultimate type of commercial aeroplane.

A Marconi Appointment.

Commodore Sir Bertram Fox Hayes, K.C.M.G., D.S.O., R.D., R.N.R. (Ret.), has been made a Director of the Marconi International Marine Communication Co. Ltd. It will be remembered that Sir Bertram Hayes retired from the position of Commodore of the White Star Line at the end of last year after a distinguished career covering 35 years with the White Star Line, 26 of which were spent in command.

Sir Bertram Hayes has had experience of wireless at sea from the earliest days of its application to shipping and he has seen its use develop from the first small sets of limited range to the elaborate installations which now enable our principal ships to keep in constant communication with the outside world throughout their voyages.

In the important commands which Sir Bertram Hayes has held he has always made the fullest use of his wireless installation. He has the highest possible opinion of the wireless direction-finder, an invention which will, when fully developed, go far to assure safety in Civil Aviation.

A Long French Flight.

Capts. Lemaitre and Arrachard, who recently flew from Paris to Port Etienne, near Dakar, without a stop, on a Bréguet XIX (450 h.p. Renault engine), arrived back in Paris on Mar. 24, after completing a round flight totalling 8,500 miles.

After landing at Port Etienne, they continued their flight to Dakar and Timbuctoo and returned via Oran, Algiers, Casablanca, Tangier, Barcelona, Toulouse and Paris.

They were met on their return by M. Laurent Eynac, Under-Secretary of State for Air.

PERSONAL NOTICES.

[Note.—*There is no charge for the publication of personal notices in* The Aeroplane *as the Editor considers that they are important news and tend to keep past and present members of the R.A.F. in touch with one another. All ranks of the Service are invited to send personal notices for publication in this column.*]

Deaths.

DRUMMOND.—On Mar. 24, Malcolm David George, only son of the late Commander Malcolm Drummond, R.N., aged 29.

SCOTT.—On Mar. 25, at Caterham, as the result of a flying accident, Ian Malcolm Scott, Plt. Off., No. 32 (Fighter) Sqdn., R.A.F.

Mr. Scott was posted to No. 32 (Fighter) Sqdn., R.A.F., on passing out of Cranwell in December last. He was Captain of the Cranwell Soccer team in 1924 and Captain of the team which won the Inter-Squadron Revolver Championship at Cranwell.

Forthcoming Marriage.

HOPE POTTER—PATTINSON.—The marriage will take place on Apr. 29, at St. Deny's Church, Sleaford, of Flg. Off. S. L. Hope Potter, son of the late Dr. John Hope Potter, of Porlock, Somerset, with Dorothy, daughter of Mr. S. Pattinson, J.P., and Mrs. Pattinson, Westholme, Sleaford.

Births.

DANN.—On Mar. 25, at "Woodlands," Westcliff-on-Sea, to Gwendoline, wife of Flt. Lt. C. W. Dunn, M.C., R.A.F.—a daughter.

RUSSELL.—On Mar. 26, at 8, Athenæum Street, Plymouth, to Gweneth Russell, M.B.E. (*née* Moy Evans) and F. S. Russell, D.S.C., D.F.C., B.A.—a son.

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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

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"THO' MERLIN SWARE THAT I SHOULD COME AGAIN."

("The Passing of Arthur"—Tennyson.)

APR 27 1925



THE PASSING OF R.33, out of her shed at Cardington on her resurrection morning, April 1. She is of about 1917 design and was incarcerated in 1920 when the Air Vote was so reduced that there was not enough money available to operate airships

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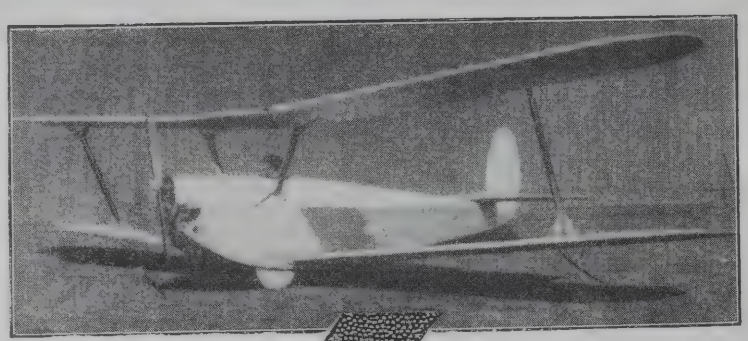
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ON IMPERIAL SAFETY.

In recent issues of THE AEROPLANE a great deal has been printed about Safety First but always in relation to the safety of the pilot and his passengers. The time now seems appropriate to deal with the much bigger question of aircraft in relation to the safety of the British Empire.

The two subjects are naturally closely interwoven. That is to say, if flying is not made safe for pilots and passengers then our Air Force can never be as efficient or as effective as it might be if the safety of aviators were assured so far as their actual flying is concerned, and if their only dangers in war were those caused by enemy action. An air force mounted on machines which can be landed at a standstill and are designed so as to avoid nose-diving and spinning, so far as is ultimately possible, and equipped with parachutes so that the crew can descend with comparative safety even if the machine should break in the air or be damaged by enemy fire must naturally have a higher moral and be more willing to go into action than an air force equipped with badly-built machines which are difficult to control and have no life-saving equipment.

Moral which is attained by such means is better than moral which is based solely on discipline or patriotism or any other purely psychological cause. The man who goes up to fight in what he knows to be a safe machine can concentrate the whole of his attention on fighting so that the effect of his discipline or patriotism is vastly increased.

There used to be a popular saying that an Irishman fought best when he was half-drunk, and a Scotsman when he was half-fed but that an Englishman always fought best on a full stomach. The moral effect on any air force of knowing that its equipment is adequate both in quality and quantity is very much like the effect of good feeding on English troops. And we should remember that the astounding feats performed by the British Army during the War 1914-18 were largely due to the fact that the British Army was, after the first year of the War, the best-fed and the best-clothed and generally the best-equipped Army that the world has ever seen. And even from the very beginning, when ammunition and heavy artillery and machine-guns and aircraft were lacking, the British Army was always well fed.

NATIONAL SAFETY.

Now quality in aircraft is of two kinds. There is quality of detail design on which depends the strength of the machine and so its safety against breakage while in the air. So long as this quality is backed up by good material and good workmanship the Service aviator may at any rate achieve that moral which comes from having confidence in the safety of making his machine do anything that it can do.

But there is also the quality of aerodynamic design on which depends the actual performance figures of the machine, that is to say the greatest speed at which it can fly, the greatest height to which it can climb, the rate at which it can climb, the greatest load it can carry either in the form of petrol (which means duration in the air) or in the form of bombs or torpedoes (which means its destructive power). And anybody will easily understand that, no matter how well-built an aeroplane may be and no matter how safe it may be against breakage in the air and no matter how sure the pilot may be of being able to land it comparatively safely on any sort of ground of any size, his moral will never be as high as if, given the same qualities of detail design, he knows that his machine is faster and can climb higher and can remain longer in the air and can carry a bigger load of ammunition than enemy aircraft built for similar purposes, whether it be as pursuit ships or fighters or reconnaissance machines or bombers.

Even the least intelligent will surely understand that given equal fighting power on land or sea, and granted that the air force of every nation is in fact its first line of offence or defence as the case may be, the national safety of any country must depend on the moral of its air force. And one believes that anybody who has thought over the question at all will see that as the moral of its air force depends on the quality of its equipment we ultimately arrive at the conclusion that the safety of any nation depends on the performance figures of its aircraft. It is precisely in the performance figures of its aircraft that the Royal Air Force is so lamentably weak to-day.

PUBLIC PROPAGANDA.

During the week beginning Mar. 23 *The Daily Mail* published a series of articles by Mr. Harry Harper, who is certainly a pioneer of aviation amongst journalists, in which he has endeavoured to impress on the millions of readers of that paper the fact that Britain must rule the Air with an adequate air force as our only way to safety, that our air power is lost, that the taxpayers are illusioned, that our defences are inadequate and that we have need for a bigger flying force with reserves of men and machines.

Since then the aeronautical correspondent of *The Morning Post* has also been endeavouring to stir up the more intelligent members of the community to a belief that the Air Force needs improving, his leading arguments being that the quality of our machines is poor and that their specifications are ridiculous.

Each of these writers in his own way may have done good by influencing public opinion and so making their task easier for those high officials of the Air Ministry who themselves know precisely what is the matter but are hampered by the system which pervades all Government departments and so makes impossible sudden reforms which are known to be necessary.

The sack-the-lot policy of which we heard so much in Mr. Lloyd George's push-and-go days during the War 1914-18 can never produce anything except chaos. Even the worst of minor officials is at any rate a tooth in a gear-wheel of the departmental machine and one cannot remove all the teeth from a gear-weel at once and expect the gear-wheel to do its work. Either one must be prepared to put a complete new gear-wheel in its place, or one can replace the teeth one by one till the machine works efficiently.

Mr. Harper being obliged perforce to write down to the level of readers of the more popular papers necessarily assumes the rôle of the fat boy in *Pickwick* and endeavours to make everybody's flesh creep with terrible forebodings of the bombing of our defenceless cities. At the same time one must give him his due in that he does drive home the fact that "squadron will meet squadron in implacable encounter" and that in addition "there will be unremitting day and night attacks upon aerodromes and aerial bases" and he admits that "even by the decimation of London an enemy might conceivably not win the War."

Incidentally, people are a little apt to forget that decimating means the killing of one in ten and does not mean the wiping out of everybody, very much as they are apt to forget that a holocaust is destruction by fire and not a manual massacre.

Mr. Harper also allows himself to commit the error of trying to terrorise his readers with the statement that "waves of poison gas released from giant bombs as they struck the ground would flow pitilessly in all directions descending into the basements of houses and creeping down into the tubes" so that "London would be a city of the dead."

CHEMICAL WARFARE.

Those who are at all scared on the subject of gas bombs and chemical warfare generally are strongly recommended to read a very small book called "Callinicus, A Defence of Chemical Warfare," by J. B. S. Haldane, who is the Sir William Dunn Reader in Biochemistry at the University of Cambridge. It is published by Kegan Paul, Trench, Trubner and Co. Ltd., of 68, Carter Lane, E.C., at 2s. 6d.

Not only is it one of the most informative but it is one of the most amusing books which one has met. There are only 84 pages of it and it can be read marked learned and inwardly digested in about half-an-hour but the lessons which it teaches will last a lifetime. Mr. Haldane did good service as a bombing officer during the War 1914-18, but being a knowledgeable chemist he was naturally only employed for a comparatively short while on chemistry.

The chief lesson of his book is one which has been preached in THE AEROPLANE practically ever since the paper began in

1911, namely that the more terrible the weapons of war the smaller is the proportion of casualties. Curiously enough Mr. Haldane uses one's own favourite illustration, that of the battle of Cannæ, in which, as the fighting was purely hand-to-hand, the casualties were extraordinarily high, and he supports one's argument that as weapons have improved the casualties have become less in proportion.

He proves conclusively that with the development of chemical warfare people can be put out of action without killing them or maiming them for life as was the result when, as he says, "The soldier's business was to push or throw pieces of metal at the enemy." He demonstrates that the killing gases are nothing like as effective in putting people out of action as are the gases which cause temporary incapacity, such as tear gas and mustard gas, without causing permanent disablement.

On this subject of killing for killing's sake Mr. Haldane is particularly amusing. The following story from his book illustrates his arguments better than most of the others :—

In 1915 a British chemist proposed to a General who was concerned with such questions that the British should use dichlorethyl sulphide (mustard gas). "Does it kill?" asked the General. "No," he was told, "but it will disable enormous numbers of the enemy temporarily." "That is no good to us," said the man of blood; "we want something that will kill."

It is interesting to find how completely the ideas of this worthy soldier as to the object of war coincided with those of the average intelligent child of five years old. I may remind you that Clausewitz held the view that the object of war was to impose one's will upon the enemy. This idea would, however, appear to have been too abstract, too complicated, or too humanitarian for the British military mind.

At any rate, it had its fill of killing. It was not, therefore, until the Germans had demonstrated upon the persons of some tens of thousands of British soliders (we had 14,000 casualties, though with only 400 deaths, during the first three weeks of the mustard gas war) that there was something to be said for a weapon that was not primarily designed to kill, that we began to use it.

Gas versus H.E.

On the whole Mr. Haldane argues that gas attacks may be very effective against troops in the field especially entrenched troops but that high explosives will be far more effective against towns. He reasons thus :—

The reasons why explosives are more likely to be effective than poison on a town are as follows. Houses are far more vulnerable to explosives than earthworks, and do far more damage to their occupants in collapsing, besides being inflammable. And, on the other hand, they contain far more refuges which are nearly gas-proof. A shut room on a first or second floor would be nearly proof against gas released in the neighbourhood if it had not got a lighted fire to drag contaminated air from outside into it. Moreover, civilians could, and would, rapidly evacuate an area which had been heavily soaked with mustard gas, whereas soldiers have to stay on at the risk of their lives.

Gas-bombs would certainly be far less effective than high-explosives on a town whose inhabitants were provided with respirators, probably even if they were unprovided. But, so long as London is undefended in this respect, it constitutes a standing temptation to any power desirous of making this kind of experiment. Judging from experience, there is no doubt that a gas or smoke attack from the air would occasion a first-class panic.

As one has pointed out at various times in this paper the next great war will be almost certainly an essentially mobile war fought over the central plains of Europe, chiefly with cavalry and mechanical transport. There is very little likelihood of London or indeed any part of England being attacked at all and the probability is that the Home Defence Air Force will not operate from English aerodromes in defence of England at all but will operate from German aerodromes in defence of Western Civilisation against the yellow folk from Russia.

Education.

Mr. Haldane argues that the greatest safeguard against gas attacks is a proper understanding of the nature of chemical warfare and delivers himself of the following dictum :—

After all, our greatest weapon in chemical warfare is not gas but education, and education of all classes. By education I mean a process which puts people in general in touch with the thought of the abler minds of their own and past times, whether in literature or art, in science, mathematics, or music. An educated man knows enough of science, for example, to be able to distinguish a gas from a smoke, or a Grindell-Matthews from a Marconi, even if he is not thoroughly versed in the kinetic theory of gases or the laws



HINAIDI.—The R.A.F. Aerodrome near Baghdad. This photograph was taken by the R.A.F. Photographic Section in March, 1924, from a height of 200 ft. In the foreground are No. 30 Sqdn.'s hangars with No. 8 Sqdn. next to them, and on the extreme right No. 1 Sqdn.'s three hangars. On the other side of the aerodrome, from right to left, are No. 45 Sqdn., No. 70 Sqdn., and the Aircraft Depot. The buildings in the background are H.Q., Armoured Car Coys., and Army Units. The triangular piece of aerodrome shown is about one-eighth of the total area available for landing.

One Engine: One Aeroplane
17,000 Miles
220 Hours Flying Time

AIR Vice-Marshal Sir W. Sefton Brancker, K.C.B., A.F.C., piloted by Mr. Alan J. Cobham, left Croydon Aerodrome, on November 20th, 1924, on a De Havilland Aeroplane fitted with an Armstrong Siddeley "Puma" Engine, to investigate an Air Route to the East.

They returned to Croydon Aerodrome on March 18th, 1925, having flown over 17,000 miles in 220 hours flying time using only one Aeroplane and one Engine.

The wonderful qualities which have ensured the outstanding reliability of the PUMA Engine are embodied to an even greater extent in the JAGUAR and LYNX Engines—our latest productions.

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governing radiation through the ether. Educated men are rather rare.

As to chemical warfare in general he closes his arguments thus :—

If it is right for me to fight my enemy with a sword, it is right for me to fight him with mustard gas: if the one is wrong, so is the other. But I have no sympathy whatever for Mr. Facing-both-ways when he says that, though he is prepared on occasion to fight, he will not use these nasty new-fangled weapons. Of course I am not suggesting that we should violate or prepare to violate the Washington Agreement on this subject. I do, however, believe that we ought to denounce it at the earliest possible opportunity.

On the whole it appears that gas is a more humane weapon than high explosives and much more so than hand weapons when it can be used with effect. But the chief drawback to gas is that it can only be used under exceptional conditions.

Some time ago one asked an officer of the R.A.F. who knows quite a great deal about the subject why we do not use gas in our wars with the Pathans on the Afghan Frontier (which incidentally is not the Frontier of India). His reply was that a stream of gas trickling down a hillside would merely amuse the wily Pathan and that although it is true that splinters of bombs and rocks have little effect against men who have taken cover behind large boulders they do at any rate cause more unpleasantness for the actual weight of bomb carried than could possibly be caused by any known gas in such open country. On the whole therefore there seems to be little need to worry about attacks by gas other than that of the verbal or propagandist kind.

(To be continued.)

The Forthcoming Stalling Tests.

This paper has been informed by Mr. Fokker that he will give a demonstration with his new F.VII (Napier engine) at Croydon, on Wednesday, Apr. 15, at 11 a.m. He will demonstrate that the machine is controllable below stalling speed and when stalled will not nose-dive and/or spin.

There is some hope that a British machine will also give a similar demonstration. No doubt it will be very instructive, but what one would like to see would be a similar test by a British passenger machine built for service with Imperial Airways Ltd.

Everyone knows that British machines can do what Mr. Fokker can do, but the pity of it is that there is no British passenger machine that can do what Mr. Fokker's passenger machine has been able to do for some considerable time. Full control below stalling speed by a pilot with no greater skill than is needed by a motor-'bus driver is a possibility and should therefore be demanded by the Air Ministry as a necessary qualification for a certificate for any passenger-carrying machine, and even for freighters.

Of British machines the Fairey Flycatcher (Jaguar or Jupiter engine) or a Fairey Fawn (Napier engine) could demonstrate that the R.A.F. already have machines with the desired qualities. Also, judging by rumours from Farnborough, there seems a possibility that the Avro which has been fitted experimentally with Handley Page slots to the ailerons can do very much the same tricks in the way of sinking after stalling without nose-diving or spinning.

Would it not be possible for the Air Ministry, in the best interests of the prestige of British aircraft, to permit these three types to be demonstrated at the same time as Mr. Fokker is giving his demonstration?

Imperial Airways.

The following letter has been received from Colonel Frank Searle. It will be found that it confirms various points mentioned in the recent article on Imperial Airways Ltd. and elaborates others. The general position should by now be fairly clear to the aeronautical community :—

Sir,—In the article "On a Year of Imperial Airways" which appeared in your issue dated Apr. 1 you are quite correct in assuming that I have severed my connection with Imperial Airways Ltd.

The only reason for my doing so is contained in a letter to me from Sir Eric Geddes dated Mar. 18, in reply to my letter to him dated Dec. 22. In his letter he suggested that I should vacate my position as Managing Director and stated that such action was taken as "the board considered it their duty to the shareholders."

I should like to say that the board made no investigation into the management of the company prior to my leaving, nor had there been one word of complaint before they had reached their decision.

It is true that there have been many differences of opinion with regard to policy. But it must be remembered that in any new type of business everybody has a perfect right to their own opinion, since there are no established facts to go upon. The board consists of very successful men who know the danger of trusting the unknown, but none of them has successfully operated any new forms of transport. And, although my experience has in fact been unique in this direction, they must find it very difficult indeed to arrive at a correct conclusion when they hear so many conflicting opinions on the same subject.

Such men want a lot of convincing and in such company my rhetoric may have left a lot to be desired. But on the other hand I have the great satisfaction of knowing that what has been accomplished has placed the Company in a very strong position for its second year of operation.

I make no complaints, neither have I any explanations to offer, bearing in mind the American saying "Never explain. Your friends don't need it and your enemies only twist it." Beyond that you seem to have sized up the situation.

In conclusion I should like to take this opportunity of conveying my very sincere thanks to everybody who worked under me in Imperial Airways for their great loyalty and untiring energy, which made possible a record achievement in the history of Commercial Aviation. I would also like to thank the officials of the Air Ministry for their courteous assistance so generously given at all times. Had it not been for such whole-hearted support I should have resigned six months ago.

Thanking you for your kind appreciation of my humble efforts. (Signed) Frank Searle.

The Royal Aeronautical Society's Report.

The 60th Annual General Meeting of the Royal Aeronautical Society was held at the Society's offices, at 7, Albemarle Street, on Mar. 31

In moving the adoption of the Council's report and the accounts, which showed a deficit for the year of £358 16s. 10d., the Chairman (Lt.-Col. H. T. Tizard) said that the Society had been passing through difficult times since the war which had culminated in the resignation of the Secretary, Lt.-Col. W. Lockwood Marsh.

The Council felt that the loss of a permanent Secretary was a serious matter but, after careful consideration of the possibilities of increasing the Society's income or decreasing its expenditure in other directions, had come to the conclusion that they had no other course but to accept the Secretary's resignation. The only possible way for the Society to pay its way was to lower the cost of administration and, much though they would feel the loss of Col. Lockwood Marsh, whose services to the Society and to Aeronautics generally were well known, they must simply do the best they could with an Honorary Secretary till better times came.

What the Society really needed to put it into a stable position was an endowment fund of, say, not less than £10,000. He mentioned this in the hope that the appeal might not fall altogether on deaf ears.

In regard to honorary officials he would like to record their great appreciation of the services of the Editor, Mr. J. L. Pritchard, who had been looking after the Journal for five difficult years and had consistently declined to accept any honorarium for his services.

In conclusion he referred to another matter of general importance. Negotiations had been going on for some time with a view to the amalgamation of the Institution of Aeronautical Engineers with the Society and he was hopeful that a satisfactory solution would be found. If the Councils of the two bodies agreed on a scheme it would be necessary for the agreement to be ratified at a special general meeting of the Society.

The adoption of the Council's Report was then formally moved and carried. On the motion of Wing Cdr. T. R. Cave-Browne-Cave, seconded by Sir Henry White-Smith, a resolution was adopted placing on permanent record the Society's great indebtedness to its retiring Secretary, Lt.-Col. Lockwood Marsh, for his conduct of the Society's business during five exceptionally difficult years.

The following Members were declared duly elected to the Council :—Major-General Sir W. Sefton Brancker, K.C.B., A.F.C., Mr. Griffith Brewer, Wing Cdr. T. R. Cave-Browne-Cave, C.B.E., F.R.Ae.S., Sir Mackenzie D. Chalmers, K.C.B., C.S.I., Mr. C. R. Fairey, C.B.E., F.R.Ae.S., Professor C. F. Jenkin, C.B.E., F.R.Ae.S., Major A. R. Low, F.R.Ae.S., Major R. H. Mayo, O.B.E., F.R.Ae.S., Mr. W. O. Manning, A.F.R.Ae.S., Mr. J. D. North, F.R.Ae.S., Lt.-Col. M. O'Gorman, C.B., D.Sc., F.R.Ae.S., Col. the Master of Sempill, A.F.C., A.F.R.Ae.S., Sir Napier Shaw, F.R.S., D.Sc., F.R.Ae.S., Sir Henry White-Smith, C.B.E., Mr. T. O. M. Sopwith, C.B.E., A.F.R.Ae.S., Mr. C. W. Tinson, A.F.R.Ae.S., Mr. H. T. Vane, Major H. E. Wimperis, O.B.E., F.R.Ae.S., Mr. R. McKinnon Wood, A.M.Inst.C.E., F.R.Ae.S.

The C.I.N.A.

During the present week the *Comité Internationale de Navigation Aérienne,* which includes delegates from twenty-two nations, either allies or neutrals in the War 1914-18, is holding a Conference in London. The aims of this association are to formulate and agree to rules for International Air Navigation, and the delegates do in fact represent their respective governments.

The association is somewhat like the League of Nations, in that it means well but has no power to enforce its pious resolutions and does not include the nation which matters most in Europe,—Germany. Holland, another important air Power, is also out of the association. One believes that Germany and Holland are both to join the C.I.N.A. next year. If so the association may become a real force in aviation.

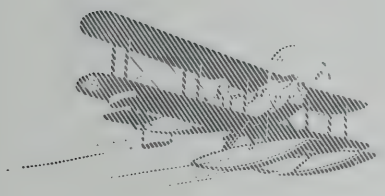
The doings of the delegates, who are being plenteously entertained in London, will be reported when they have done their work.—C. G. G.

Aerial Survey.

The Cambridge University Press announces a work by Professor B. Melvill Jones, entitled "Aerial Surveying by Rapid Methods," the main purpose of which is to discuss the possibilities of aerial photography as a means of surveying and mapping the earth and to record and describe a series of experiments made at Cambridge by the author and the late Capt. J. C. Griffiths. In addition to diagrams and tables, the volume includes a map made up of mosaics of vertical photographs.

A review of this book will appear in The Aeroplane in due course.

Fokker selects Napiers !



The manufacturers of the Fokker aeroplanes are installing Napier aero engines in large numbers of machines they are despatching to all parts of the world.

THE Napier is selected because it has proved its extraordinary RELIABILITY, EFFICIENCY, ECONOMY and SPEED.



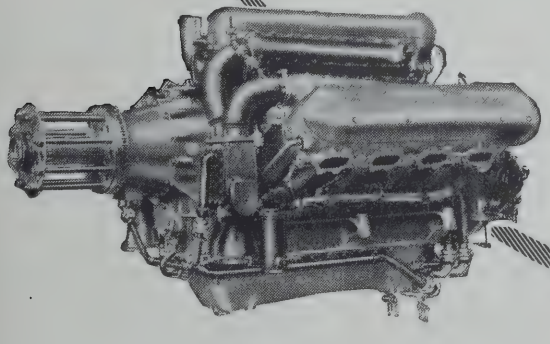
The Napier 'Lion' engine has run 742 hours of testing under British Air Ministry official type test conditions.

On its latest official type test the Napier ran for 104 hours. For one hour the engine ran at full throttle developing 494 B.H.P. at 2200 r.p.m.

Major Zanni, flying a Fokker aeroplane, covered the distance from Amsterdam to Tokio (10,000 miles) without touching his engine.

Five Napier engines employed by Imperial Airways have each covered over 100,000 miles and are still in service. One engine has covered over 140,000 miles.

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THE BRITANNIA TROPHY PRESENTATION.

On Apr. 3 the Britannia Trophy awarded to Wing Cdr. Goble and Flt. Lt. McIntyre, Royal Australian Air Force, for the best flight made by British aviators during the past year was presented to Wing Cdr. Goble who has recently been appointed to the R.A.F. Staff College at Andover. The presentation was made at a lunch given at the Savoy Hotel by the Fairey Aviation Company Ltd. to Wing Cdr. Goble and various brother and sister Australians and among the guests were the members of the International Committee for Air Navigation of which the correct title is the Comité Internationale de Navigation Aérienne, commonly known as the C.I.N.A.

Mr. C. R. Fairey, proposing the toast of Wing Cdr. Goble and Mr. McIntyre, said that it was a privilege to express appreciation of their wonderful feat and that it was also a pleasure to entertain the C.I.N.A. He said that many other great flights had been done since Cdr. Goble's but those who knew the circumstances would endorse the verdict of the Royal Aero Club in awarding the Britannia Trophy to him and Mr. McIntyre.

The flight had been done on a machine and engine which had been for three years on its lawful occasions at a Service station of the Royal Australian Air Force. He expressed his admiration for the dogged perseverance of the crew and reminded his audience that they had flown nearly 9,000 miles in 90 hours' flying time and were ready to go round again.

The flight came at a very opportune moment. Just after the War we were supreme in the air and had the best equipped and best manned Air Force. A kind of Golden Age of British aviation followed immediately after the War. The Atlantic was crossed in a single flight by Capt. Alcock and Australia was reached by air. He recalled how much Australians had had to do with these great flights. The Smith brothers had flown to Australia, Parer and McIntosh had made a most audacious flight over the same route, and the late Harry Hawker had failed gloriously in the very first attempt to fly the Atlantic.

Then, in the public mind at any rate, an ebb tide had set in. Last spring we had a very small share in the big flights to the East which were made by foreign aviators in the steps of the British pioneers. And the American Army aviators had flown round the World. So the news of Cdr. Goble's attempt was very welcome and his success had done a very great deal to re-establish the prestige of British aviation.

In some branches of aviation we were out-numbered or out-shone. When this fact had really sunk into the minds of the Public, pressure of public opinion would support the Air Ministry's uphill fight for a bigger and better equipped Air Force.

But it was only in some ways that other nations excelled. We still had the best pilots in the World and pilots were the only sure foundation of air supremacy. He knew this as a veritable truth. However great might be the progress in the design of aircraft it could never keep pace with the spirit of the men. He looked forward with confidence to an unending supply of the right type of man to maintain our supremacy in the air.

His Grace the Duke of Sutherland (Vice-President of the Royal Aero Club), presenting the trophy to Cdr. Goble, said that Mr. Fairey was naturally modest. We ought to consider the merit of the machine and its designer. Goble and Fairey together were an invincible combination. His Grace recalled that in 1913 the Trophy was won by Capt. (now Air Commodore) Longcroft for his flight from Montrose to Farnborough via Portsmouth. In 1914 it was won by Flt. Lt. Seddon, R.N.: in 1919 it was awarded to Sir James Alcock for crossing the Atlantic: in 1920 to Mr. Bert Hinkler for his flight to Milan: in 1922 to Mr. Raynham for his gliding at Itford: and in 1923 to Mr. Cobham for his European flights.

Wing Cdr. Goble, C.B.E., D.S.O., D.S.C., R.A.A.F., replying, said that he was sure that the Royal Australian Air Force would be mindful of the honour conferred by the Royal Aero Club in awarding this highly prized Trophy for what was an ordinary Service flight.

He said that far the greater portion of the credit was due to McIntyre for his skill and airmanship and cheerfulness. He had an old head on young shoulders and that was what made the flight possible.

Recalling the flight itself Cdr. Goble said that they went without a mechanic to save weight, and threw their wireless overboard,—he added that as there were no wireless stations round Australia that did not matter much. The only seaplane slipway in Australia was that at Melbourne whence the flight began and where it ended, so they had to carry as much as possible of the equipment of a seaplane station with them, such as spare parts, tools, waders, etc. Consequently their personal luggage was contained in a Nugget blacking box. They carried one razor and one shaving brush, but they *did* take two tooth-brushes. In spite of that they were always overloaded to an average of 320 lbs. and on the long stretches where they had to carry drinking water they had 500 lbs. overload. When they spent the night on beaches they had to sleep watch-and-watch about as one of them always had to be ready to wade offshore and keep the machine afloat. In some places the fall of the tide was as much as 35 feet.

In spite of all the warning about the effect of the climate on the machine they found that its performance in the tropics was almost as good as in the temperate zone. When they got back not a wire in the machine was broken, thanks to McIntyre's piloting, and not an adjustment had been made in the Rolls-Royce engine for 3,000 miles. When the engine was taken to pieces nothing needed renewing and it was merely reassembled, put into another Fairey machine and flown 2,000 miles to North Queensland, where for some months it did photographic work over the Great Barrier Reef, all the photographs being taken at 10,000 feet. On behalf of his Service he thanked the Fairey Company and the Rolls-Royce Company for supplying such material.

He referred admiringly to the flight by Col. Brinsmead and Mr. Jones on the de Havilland with a Siddeley Puma engine over 7,000 miles of inland Australia, and he also referred to the recent flight by Sir Sefton Brancker and Mr. Cobham to India and back on a similar machine. Finally he thanked Mr. Fairey for the silver model of his seaplane which he had presented to him.

Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P., proposing the toast of the Commonwealth of Australia, lamented his own ignorance of that country and said that if Sir Geoffrey Salmond's schemes for an Imperial Air Route matured he hoped to remedy that defect. He reminded his hearers that Australia was as far as possible from this country so that the Australians had to work out their own problems and had to look to their own right hand for defence. They came here for material and found a Fairey Godmother.

He expressed his profound admiration for all aviators and added that sometimes when aviators thought too much of themselves he reminded them that they could not yet emulate the ordinary housefly and land upside down on a ceiling, but he now realised that every Australian aviator did it every day. Becoming momentarily exceedingly serious he said that he had a grave complaint to make to the High Commissioner for Australia, which was that he objected to the lamentable embargo which Australia had put on the export of ashes to this country. [For the benefit of the uninitiated one must explain that the reference is to recent Test Matches in our national game Cricket.] He said that we ourselves must remedy this.

Sir Joseph Cook, P.C., High Commissioner for Australia, replying said that a film of the attempt to retrieve the ashes could be seen at Australia House any afternoon and that a film of Cdr. Goble's flight might also be seen. Thanking the Vice-President of the Royal Aero Club for presenting the Trophy he said that few men had done more for the Air Branch of Imperial Defence than had His Grace the Sutherland. He himself (Sir Joseph Cook) had been Minister for the Australian Navy when Cdr. Goble had put up various propositions concerning air defence problems in Australia. Australia had precisely the same difficulties in the relationship between the Service as had this country.

He remarked that his substantial friend the Chairman could scarcely be called a Fairey Godmother but that at any rate the story of this flight sounded like a fairy tale. Many things were possible for aviation in Australia which were not possible in the foggy climate over here. He himself had helped to get a subsidy of £25,000 for the Australian air mail services, two of which had been going regularly for three years without mishap. Finally he said that Cdr. Goble's flight was a credit to the race to which he belonged.

Mr. T. O. M. Sopwith, Chairman of the S.B.A.C., proposing the health of the Chairman, said that lack of organisation was what made these flights such as Cdr. Goble's and Sir Sefton Brancker's so interesting and valuable. He referred to Mr. Fairey as his honoured competitor and said that his name was a milestone in British aviation. [Would not a monument be a more appropriate simile?—Ed.]

Lt.-Col. Frank McClean, seconding the toast, said that he had the choice between making a speech and keeping an appointment with his dentist. He preferred the dentist.

Mr. Fairey, replying, said that he claimed to be a fanatic more than an engineer, so far as aviation was concerned. He was convinced that aviation was not only our greatest defence but the greatest possible means of binding the Empire together in time of peace.

THE ROYAL AIR FORCE.

Appointments.

Week ending Apr. 6.

General Duties Branch.—Group Captain C. L. Courtney, C.B.E., D.S.O., to R.A.F. Staff College, Andover, for duty as Instructor, 22/4.

Wing Commanders C. H. K. Edmonds, D.S.O., O.B.E., to Armament and Gunnery School, Eastchurch, pending taking over command, 4/5. T. W. Mulcahy-Morgan, M.C., to R.A.F. Depot pending commencement of next course at Senior Officers' School, Sheerness, 14/4. J. H. A. Landon, D.S.O., O.B.E., to Station Commandant, Iraq, for Air Staff duties, 9/3.

Squadron Leaders T. W. Elsdon, to R.A.F. Depot on transfer to Home Estab., 14/4. A. C. Maund, C.B.E., D.S.O., to Air Ministry, 14/4. R. Collishaw, D.S.O., O.B.E., D.S.C., D.F.C., to No. 6 Group H.Q., Kenley, 14/4. F. H. M. Maynard, A.F.C., to H.Q., Inland Area, 14/4. T. E. B. Howe, A.F.C., to R.A.F. Base, Gosport, 14/4. E. M. Pollard, to R.A.F. Depot, 14/4. G. C. Pirie, M.C., D.F.C., to Air Ministry, 27/4. E. A. Beaulah, to R.A.F. Depot on transfer to Home Estab., 24/2.

Flight Lieutenants H. V. Rowley, to No. 47 Sqdn., Egypt, 17/1. J. P. Coleman, A.F.C., to R.A.F. Depot, 14/4. J. W. B. Grigson, D.S.O., D.F.C., P. F. Fullard, D.S.O., M.C., A.F.C., and C. J. S. Dearlove, to R.A.F. Depot, 14/4. J. H. Green, to No. 24 Sqdn., Kenley, 14/4. L. N. Hollinghurst, D.F.C., to H.Q., Inland Area, 14/4. C. J. Truran, A.F.C., to No. 84 Sqdn., Iraq, 13/3. J. I. T. Jones, D.S.O., M.C., D.F.C., M.M., to Aircraft Depot, Iraq, 14/3. A. L. Benge, to R.A.F. Depot, 31/3. S. C. Harker, to C. and M. Party, Isle of Grain, 28/3.

Flying Officers D. S. Brookes, to No. 4 Sqdn., S. Farnborough, 10/4. C. H. Cahill, to No. 70 Sqdn., Iraq, 20/12. R. E. M. Milne, to Aircraft Depot, India, 27/3. J. W. Mitchell, to R.A.F. Depot on transfer to Home Estab., 15/4. D. W. F. Bonham Carter, to No. 14 Sqdn., Palestine, 18/3. J. M. Wyer, M.B.E., D.S.M., to No. 47 Sqdn., Egypt, 30/1. G. S. White, to No. 9 Sqdn., Manston, 6/4. H. W. Parker, to R.A.F. Depot on transfer to Home Estab., 14/2

Pilot Officer V. A. C. Ross, to No. 58 Sqdn., Worthy Down, 1/4.

Stores Branch.—Flying Officer H. J. Bamber, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 24/2.

Accountant Branch.—Flight Lieutenant I. L. Wincer, to Engine Repair Depot, Egypt, 29/1.

R.A.F. Cadetships.

The Air Ministry announces that a competitive examination for not less than 35 cadetships at the R.A.F. Cadet College, Cranwell, will commence on June 23rd. The written examination will be held in London and certain other centres in the United Kingdom. Applications should be made to the Secretary, Civil Service Commission, Burlington Gardens, W.1, and no form of entry will be accepted unless



THE BRITANNIA TROPHY FOR THE MOST MERITORIOUS PERFORMANCE OF THE YEAR HAS BEEN AWARDED TO WING-COMDR. GOBLE FOR HIS FLIGHT IN A FAIREY IIID SEAPLANE COMPLETELY ROUND THE COAST OF AUSTRALIA ...

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any circumstances after Apr. 23. It is to be noted that the age limits are now 17½ and 19½ years.

This is the first competition to be held under a revised scheme of examination. Under this new scheme candidates other than those nominated by the Air Council and those who have failed at previous entrance examinations, will be required to produce school certificate A or B, obtained by passing certain examinations. All candidates will be required to attend before an Interview Board at the Air Ministry.

Candidates will be medically examined by the Central Medical Board of the R.A.F. It has been found in previous examinations that certain candidates have failed to attain the standard of fitness required owing, it is thought, to their having neglected to take proper exercise while preparing for the educational examination, and it is therefore desired to direct the attention of candidates to the care of their health in this respect. Parents and guardians are strongly recommended, in order to lessen the chance of subsequent disappointment, to have their sons or wards examined previous to their becoming candidates for commissions in the R.A.F., by a preliminary R.A.F. Medical Board or by a private medical practitioner.

The Fees at the Cadet College are £75 a year and in addition a contribution of £80 is required before proceeding to the College and one of £20 before the commencement of the third term to cover the expenses of uniform and books. Cadets receive pay at the rate of 5s. a day during their first year at the College and at the rate of 10s. a day during their second year. In addition an allowance of 1s. a day will be made during college terms towards the cost of messing, washing, etc. On being granted commissions in the R.A.F. cadets receive the rank of Pilot Officer with total emoluments amounting at present to approximately £450 a year and after 18 months' service they are eligible for promotion to Flying Officer with emoluments amounting at present to approximately £540 a year. These rates of emoluments are, however, liable to revision. As the unavoidable expenses to which officers are put in the R.A.F. are kept strictly within moderate limits no candidate need be deterred from applying for a commission by the fact that he has no private income.

Reduced fees are payable in certain circumstances for the sons of officers and men of the fighting services. No contributions towards uniform, etc., are payable for King's Cadets or Prize Cadets; the former also pay no fees, the latter are received at the reduced fee of £20 a year. King's Cadetships may be granted to sons of officers who have died in action or in certain other circumstances and have left their families financially reduced. Prize Cadetships (of which two will be offered at the forthcoming examination) are awarded to successful candidates in order of merit at each examination. In addition one Sir Charles Wakefield Scholarship of the value of £75 tenable for one year will be offered for competition at the forthcoming examination among candidates whose parents or guardians are in reduced circumstances.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident at Quetta, India, to a Bristol Fighter, of No. 28 Squadron, Quetta, on Mar. 30, 1925, Flg. Off. Thomas Donald Berridge, the pilot of the aircraft, was killed, and No. 831034 AC.2. Alexander Bidmead was seriously injured.

New R.A.F. Aerodromes.

The Times of Apr. 2 states that the contract which has been given to Messrs. Wright, Anderson, and Co., of Gateshead, for the construction of ten steel hangars, to a total value of £100,000, is one of several contracts pending in connection with the expansion of the Royal Air Force for home defence purposes.

The home defence scheme, as at present planned, involves the use of some 30 aerodromes, stretching along the southern side of London, up the East Coast, and away on the south-west to the West of England. Some of the aerodromes are already in existence as Service stations, others are old war aerodromes which will be put into use again, and others are entirely new grounds. Their selection has been a subject for much careful consideration. All the sites have not yet been finally settled, and, as an indication of the work which has been done, it may be said that over 500 possible sites have been considered, and an area of 6,000 square miles has in all been scrutinised in order to fix the 22 aerodromes which are more or less decided upon . They range from Filton, at Bristol, to Aldergrove, Belfast, and Renfrew, Glasgow. Some of the places, notably Belfast and Glasgow, will be training grounds for the Special Reserve and auxiliary squadrons, while others on the southern ring will be essential parts of the air defence scheme for London.

This particular contract merely marks one phase of the constructional work, for barrack rooms, stores, and workshops will also be needed. It provides for the constructional work of the hangars to hold aircraft, and the steel framings are to be ready about July of this year. A further period will be allowed for erection, and the contract provides for this to be carried out at sites which have yet to be definitely decided upon.

The Afghan Frontier.

The Times correspondent, in a message from Simla, on Apr. 1, states :—

Intensive bombing operations carried out on the North-West Frontier by the Royal Air Force during the last three weeks from Tank have been most successful. In addition to the return of two captured Hindus certain tribes have paid up their fines. The Abdurrahman Khel, who are more inaccessible owing to their living in caves, have still not completely complied with the Government's terms; therefore operations are continuing.

The Fleet Air Arm.

The Times of Mar. 28 states :—

Provision is made in the new Navy Estimates for an increase in the Air Section of the Naval Staff at the Admiralty, from one captain, one commander, and one paymaster-lieutenant-commander, to two captains, two commanders, and one paymaster-lieutenant-commander, the vote for salaries being advanced from £3,359 to £5,404.

The present staff consists of Captain T. F. P. Calvert, D.S.O., formerly in command of the aircraft-carrier *Pegasus;* Commander E. T. R. Chambers, A.F.C., who was a Wing Commander, R.N.A.S., during the war and commanded the naval air stations at Vendome, Chingford, a Dunkirk; and Paymaster-Lieutenant-Commander H. Rogers, O.B.E formerly secretary to Vice-Admiral Sir William Nicholson. January Captain Ralph Leatham, promoted at the new year, w appointed to the Naval Air Section temporarily.

The Times of Apr. 2 states :—

Orders have been issued that the aircraft-carrier *Pegasus,* Command H. C. Rawlings, D.S.O., which has just returned to England fro special service at Singapore, is to be reduced to reserve at Devo port. The crew will be given foreign service leave in two watch while the ship is being prepared for reserve, reduction to that stat taking place as soon as possible after the leave. It has also bee approved for the *Hermes,* Captain the Hon. Arthur Stopford, C.M.G to proceed to Portsmouth next month to pay off and recommissio instead of to Chatham, as at first arranged. The new crew w travel by rail from Chatham to Portsmouth. The old crew of t *Hermes* will be transferred to Portsmouth Depot before foreign servi leave is given.

The R.A.F. Memorial Fund.

The fifth annual report of the R.A.F. Memorial Fund w issued on Mar. 27 and contains a detailed account of t operations of the fund for the year ending December, 192

The total income for the year from all sources was £15,945 1 and the total expenditure £9,178 14s. 6d., leaving £5,000 be appropriated to the Reserve Account and £1,766 6s. 6 to be carried forward. The cost of maintenance of Vanbrug Castle School was £2,064 11s. 3d., and the expenses of t administration of the whole fund was £1,399 8s. 10d. Th grants-in-aid came to £6,131 0s. 9d., but £11 9s. 7d. was r paid.

The proceeds of the R.A.F. Pageant amounted £5,249 14s. 7d. as against £5,247 odd in 1923 and £3,098 in 192 The donations for the year from R.A.F. Units amounted £1,204 12s. 6d., and included such large sums as £40 fro the Serjeants' Mess at Uxbridge, the proceeds of a ball, £ from the R.A.F. Risalpur, a concert, £44 from Manston, t result of football and hockey matches, and £40 from No. Squadron, Hinaidi, an auction sale. Other large amounts fro the R.A.F. were £83 from Henlow, £104 from Cranwell, £ from Eastchurch, and £32 from Dardoni. Smaller Uni have subscribed proportionately.

Subscriptions and donations from individuals, clubs, swee stakes, etc., and anonymous donors, amounted to £917 8s. 5

The R.A.F. Point to Point.

According to the *Morning Post* of Mar. 16, cups are bei given by the Marquess of Londonderry, Sir Philip Sassoo the Under-Secretary for Air, the Duke of Sutherland, and S Victor Warrender, M.P., for races in the Royal Air For Point-to-Point Steeplechases at Boothby, Lincoln, on Apr.

The W.R.A.F. Dinner.

The Second Annual Dinner of the W.R.A.F. Old Comrad Association was held on Apr. 4 at the Victoria Restaurant. Dam Helen Gwynne-Vaughan, formerly Commandant of the W.R.A and President of the Association, was in the Chair. The Guests we Air Commodore Halahan (Director of Technical Development, R.A.F Miss Thompson (Q.M.A.A.C., O.C.A.) Miss Currey (W.R.N.S., O.C.A Miss Cruickshank (R.A.F. Nursing Service), Miss Ireland (Ex-Servi Women's Club), Col. Burch (R.A.F. Memorial Fund), Wing C Cordingly (R.A.F. Records), and Mr. C. G. Grey (THE AEROPLAN Over 100 ex-W.R.A.F.s were present.

Following the toast of "The King," Miss K. Curlett, proposi The Guests, said how much the W.R.A.F. owed in the past to t services of Air Commodore Halahan when he was commanding No. Group. Everyone would be glad to hear that W.R.A.F. Records we still in official hands. The R.A.F. Nursing Service had always be very good to those members of the W.R.A.F. who had fallen sic The R.A.F. Memorial Fund had put the ex-W.R.A.F. on exac the same footing as the ex-R.A.F. Mr. C. G. Grey had always tak a great interest in them and had given them a lot of space in h paper. She included the Sister Services in her little pæan of prai

Miss Thompson, replying, said that she had served on W.R.A Officers' Selection Boards and in its very early days had been ask to inspect W.R.A.F. detachments in camps. She arrived at Ne castle one day and found seven officers and no other ranks. Q.M.A.A.C. dinners the W.R.A.F. always sent them a Thompson w was very much appreciated. She thought the friendly interchan of Thompsons was an excellent idea.

Mr. Grey, who also replied for the guests, said that he did n believe women ought to take part in War. (*Groans.*) They were t ruthless. (*Shame.*) He quoted Mr. Kipling's famous reference to t female of the species being far deadlier than the male. (*Howls derision.*) When the uproar had subsided he went onto a safer to and said that he was very interested to hear that the W.R.A Records were still in official hands. He considered that anot War was not very far off—(*groans*)—and that the W.R.A.F. would very useful again. (*Cheers.*)

[The feminine reasoning which does not want War but does wa to take part in it is particularly illuminating!]

Dame Helen, proposing The Air, with which she coupled the na of Air Commodore Halahan, said that the Dinner was a birthd party. Apr. 1 was not only the birthday of the R.A.F. and its lit sister, the W.R.A.F., but it was also the birthday of the origi Air Battalion of the Royal Engineers.

Replying for the Air, Air Commodore Halahan said he was v glad to meet the W.R.A.F. again as he had a very vivid recollecti of their work during the War. He was pleased to see Mr. Grey as fellow-guest. Mr. Grey was the best sort of friend for the R.A because he was a friend who did not spare criticism when it w necessary. The R.A.F. was getting on very well indeed. They w to have seven new Squadrons for Home Defence this year and se or eight next year.

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The R.A.F. was a young Service and suffered from what they called "Baby troubles"—(*cheers*)—which were probably the result of very young and inexperienced men having been called upon to deal with administration and staff work. This was righting itself. Sir Hugh Trenchard might, at the end of the War have built up a tremendous Air Force which would have been the wonder and envy of other nations. But by this time it would have collapsed like a burst balloon because it would not have had a sound basis. Instead, the Chief of the Air Staff had built up the R.A.F. on the solid foundation of good barracks and highly trained mechanics. The next generation would undoubtedly profit by this policy.

Two or three years ago economy had nearly deleted the Air Force. They were cut down to the minimum in petrol, stores, machines and new personnel. But they had recovered. The Air Force was a purely defensive force.

Regarding the W.R.A.F., he had come home from Dunkerque, where there was no W.R.A.F., and had discovered that in No. 7 Group there were several thousand of them. After three months' trial he considered that the machines kept by the women were in a better condition than those kept by the men. The women showed more concentration, they stuck to their work better than the men. Air Commodore Halahan then proposed the toast of the Old Comrades' Association.

Miss F. Tipp replying, said that the O.C.A. was 840 strong and though its numbers were small compared with the strength of the Force, which had been 32,000, its activities were great.

The toast of The President was then acclaimed with (alleged) musical honours.—C. M. MCA.

R.A.F. SPORTS.

Association Football.

The R.A.F. v. The Army.—The R.A.F. beat the Army at Portsmouth on Apr. 1 by 3 goals to 1. The following account of the game is taken from *The Daily Telegraph* of Apr. 2:—

The Royal Air Force, at Portsmouth yesterday, reaped the reward of clever forward play. In overcoming the Army by 3 goals to 1 they showed much skill both in controlling the ball and finishing off their attacks. The play of Bishop, splendid in dribbling and accurate in shooting, was always hard to circumvent; he caused trouble to the Army defenders from start to end. The Airmen had the match well won before their opponents gave real trouble to Hadley in goal. Though Cartlidge rendered the Army immense service by his thorough tackling, the wing halves often gave way before attacks in which Bishop took a big part.

Several defenders endeavoured to hold up the Air Force inside right when he dribbled through 15 minutes from half-time, but Bishop kept the ball and scored a capital goal. A foul on the same player and a successful penalty-kick by Fretwell caused a second defeat for Murray, and Bishop shot hard against the cross-bar in a subsequent raid. A dashing leader, Baird snapped up a pass from Bishop to score a third goal. The Army's only point followed a free kick, Woodards kicking in when Hadley had lost position in saving from Macey.

The R.A.F. team were:—Flg. Off. G. A. Hadley (Spittlegate); Flg. Off. H. B. Williams (Cranwell) and Sjt. F. Fretwell (Hawkinge); AC. V. Kellett (Uxbridge), Flg. Off. C. N. C. Dickson (Cranwell), and Flg. Off. J. Spooner (Uxbridge); Sjt. R. Francis (Cranwell), AC. H. Bishop (Netheravon), AC. J. Baird (Uxbridge), AC. L. Smith (Uxbridge), and AC. W. Morris (Halton).

Hockey.

The final of the R.A.F. Senior Hockey Cup between No. 1 School of Technical Training (Boys), Halton, and Inland Area Aircraft Depot, Henlow, was replayed at Uxbridge on Mar. 27. The first match was left drawn after extra time had been played.

The first half was very even, both sides pressing alternately and both goals being in danger several times, but it was not until just before the interval that Henlow opened the scoring with a good shot from Whenlock following a nice passing movement.

Henlow had rather the better of the second half, but could not score and half-way through Ganley put Halton level with a drive from the edge of the circle. Following this the Halton goal was in danger several times, but shots either went wide or were well stopped by the goalkeeper and time arrived with the score 1—1 and extra time was played. Halton pressed strongly and Romanes scored following a melée in the circle; the play remained very fast and even.

After the game the Senior Hockey Cup was presented by Mrs T. I. Webb-Bowen.

The teams were:—

Halton.—AC. Walker; Flt. Lt. Murphy, Cpl. Buckland; S.M. Smith Flt. Lt. Smith, AC. Webb; AC. Romanes, Flt. Lt. Flavelle, Sq. Ldr Vaisey (captain), AC. Ganley, AC. Matthews.

Henlow.—AC. Gaynes; Flt. Lt. Angell (captain), L-AC. Fox; Cpl McLaren, Flg. Off. Traill, Flg. Off. Stafford; Flt. Sjt. Barber, AC Dare, AC. Renshaw, AC. Whenlock, AC. Pryke.

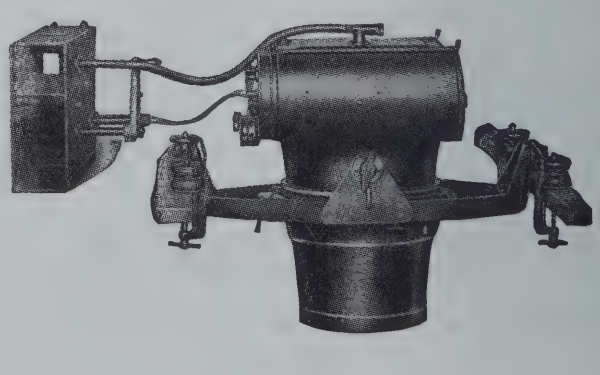
The Rhymes of Rufus Ruderbar.

The Chief Staff Officer.

Where's the first-aid dressing station,
Whither I may swiftly hasten?
(This is an appalling rhyme,
But you will forgive my crime,
As it's due to agitation?)
For you see I have been bitten,
Not by cat nor yet by kitten,
Neither monkey, dog, nor mo-
-tor; I've been rated, slated, hated,
By a somewhat agitated,
By a most exasperated,
By a most exacerbated,
By a most infuriated,
By a frothing C.S.O.;
And I fear that hydropho-
-bia will shortly set me frothin'
(From the way he showed his wrath in)
For no bite holds more hell's broth in
Than a rabid C.S.O.

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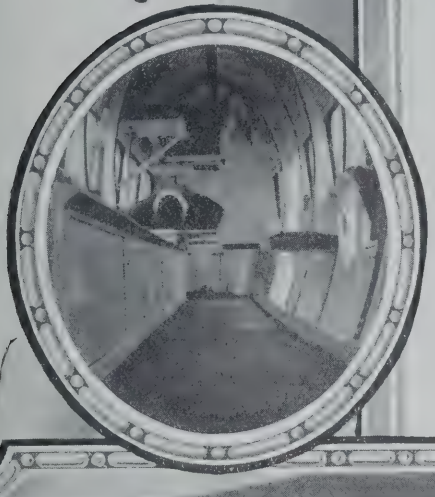
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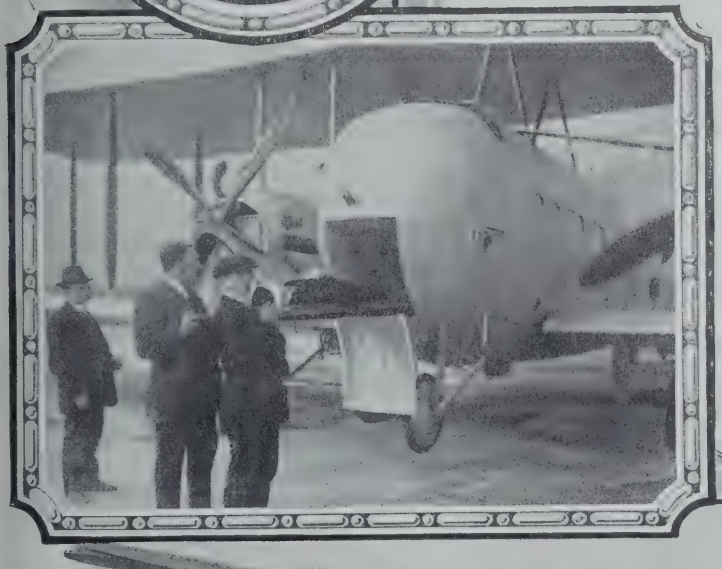
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BRITISH AIRSHIP PROGRESS.

The reconditioning of R.33 (G-FAAF) has now been completed at the Cardington Airship Works. The ship has been laid up in its shed for over three years, and it has therefore been subjected to a very careful examination. It is interesting to record that the duralumin framework was found to be in very good condition, and that only a few parts of the structure have deteriorated. This fact, coupled with the very serious deterioration which has been found to occur in certain duralumin-framed heavier-than-air craft in this country, suggest that the designers of airships have—as they might be expected to have—a better practical knowledge of the precautions which must be taken to prevent corrosion in light-alloy structures.

In the process of overhaul the ship has been fitted with a large number of pressure-plotting orifices in the outer cover and with the necessary pipe leads therefrom to enable the air pressure over the surface of the ship to be mapped accurately. There is no room for doubt that the disaster to R.38 was the result of air-pressure loads imposed on the structure which were not allowed for by the designers. The greater part of the data which are available as to the pressure distribution on airships in flight is based on tests of small-scale models in the wind-tunnel. Not only is there grave doubt as to the applicability of such data to the full-size airship—but the conditions of manœuvre in free flight can scarcely be reproduced in the tunnel, and the measurement of the actual air-pressure distribution on a full-size ship is of the greatest practical importance for the guidance of designers particularly in connection with the design of R.100 and R.101, the new 5,000,000 cub. ft. ships which are to be built by the Air Ministry and the Airship Guarantee Co. Ltd.

The gas-bags have been thoroughly overhauled, a new outer cover has been fitted, and the engines and fuel system have been stripped and renovated, so that R.33 is now in as good condition as she was when new.

As soon as favourable weather conditions are assured the ship will carry out preliminary flying trials from Cardington and will proceed to Pulham, which will be the base for the series of experimental flights for which she is to be used. It will be remembered that there is a mooring mast already in existence at Pulham, which will make it possible to operate the ship without calling for a large handling party which would be required to get the ship in and out of the shed at Cardington.

This mooring mast, which was of a very sketchy nature and very crudely equipped has also been overhauled and improved, but is only a makeshift which will be employed in the preliminary experimental work. A much higher and better equipped mast will be necessary for the new airship when they are completed, but it may be taken for granted that the new masts will not be put in hand until the final design of R.100 and R.101 is settled, as there is a distinct possibility that the mooring gear of the new ships will differ considerably from that at present in use.

The preliminary test flights of R.33 had been provisionally fixed to begin not earlier than dawn on Wednesday, Apr. 1—a date which may have been chosen by those of the Air Ministry who dislike airships—but owing to the unsettled weather conditions which then prevailed the flight has been postponed. It has to be recollected that all the trained airship ground-handling parties have long been dispersed, and that taking an airship out of the shed in bad weather with the aid of an inexperienced ground party is a risky undertaking, but that once the ship reaches Pulham and can use the mooring mast, flying will be possible in weather very much worse than that which would render emergence from a shed impossible.

The postponed flight took place on Thursday, Apr. 2, when the ship was walked out of the shed at dawn by a party of some 300 men and women of the Cardington staff. The ship cruised in the vicinity for some two hours and having reported that everything was in order she left for Pulham, where she arrived a few minutes after 9 o'clock. Here she proceeded to fly round for another hour or so, dropping her mooring wire at 10.15. The process of mooring took until 11.30, the delay being due to the inexperience of the staff, the fact that new hauling-in gear was in use, and to a somewhat strong breeze that had risen.

R.33 was piloted by Flt. Lt. Irwin, and Major Scott was on board. It is reported that the trials passed off entirely satisfactorily, and that the crew felt perfectly at home in the ship after the first ten minutes, despite the long period during which no airship flying has occurred.

R.33, it may be recalled, is a sister ship of R.34, which made the first and only return journey across the Atlantic in 1919. The type was practically a copy of the Zeppelin L.33 and has proved itself to be exceedingly safe and robust. It is therefore eminently suitable for experimental work such as is now to be undertaken, and for the training of crews, although of very little use for practical military or transport service under modern conditions.

It is difficult adequately to express regret at the necessity which has kept R.33 and R.36 rotting in their sheds for the past 3½ years. No intelligent person can conceivably have doubted that the airship has a future field of utility both for transport and for long-distance sea reconnaissance work. No one acquainted with the history of airships can have ignored the fact that there was very much still to learn which could only be learnt by actual full-scale flying, before further progress could be made in the design of airships.

Yet to-day we are embarking on the design of ships twice as large as anything hitherto built with none of the knowledge that the past few years might have given us.

THE ROYAL AERONAUTICAL SOCIETY.

The Annual General Meeting of The Royal Aeronautical Society was held at the rooms of the Society on Tuesday, Mar. 31, Lt.-Col. H. T. Tizard in the chair.

The main tenor of the Chairman's statement related to the unsatisfactory financial position of the Society of recent years. The excess of expenditure over income during the past three years had been £279, £316, and £359, and it was obvious that it was essential either to increase income or to decrease expenditure. The only two items of expenditure which could be reduced were the cost of administration and the cost of the Journal. The Council were emphatically against cutting down the quality of the Journal, and on the question of reducing the cost of administration the secretary had placed his resignation in the hands of the Council in order to leave them complete freedom to take such action as seemed to them desirable.

The Council had considered increasing subscriptions, had made some reduction in the cost of the Journal and had put before the Air Ministry the claims of the Society for consideration in the form of a grant-in-aid. The Air Ministry had proved sympathetic, but the Treasury had not. Col. Lockwood Marsh had thereupon tendered his resignation afresh and the Council with great regret had accepted it, and they would now have to induce some member to act as part-time Secretary for a nominal remuneration.

What was needed to place the Society in a stable position was an endowment fund of at least £10,000.

The Council had viewed with regret the formation of the Institution of Aeronautical Engineers in 1919, not because they wished to interfere with the free development of any independent body, but because they could not see that that body performed any function which the Aeronautical Society did not or could not undertake. Negotiations had been going on for some time for an amalgamation with that body.

The results of the elections to the Council have already been announced in the previous issue of The Aeroplane.

A resolution was passed at the end of the meeting placing on record the Society's appreciation of its indebtedness to the retiring secretary.

An Editorial Comment.

The parlous state of the Royal Aeronautical Society—as disclosed in this report—must be a matter of great regret to all who have in memory its long history and its world-wide reputation as the senior Aeronautical Society or Association in the world.

It cannot however be held that the fault lies anywhere outside the Society itself—which has permitted itself to fall between two stools and is now apparently trying to throw some of the blame for its difficulties on the Institution of Aeronautical Engineers—a body which despite certain undoubted disabilities has confined itself to supplying a need which the Royal Aeronautical Society has signally failed to meet.

The Royal Aeronautical Society on the emergence of aeronautics from the purely theoretical and prophetic stage into that of a practically applied science had before it two alternatives. The one was to remain a scientific or philosophic society, mainly concerned with the development of the science of fluid flow as it bore on aeronautical problems.

Alternatively it might have decided upon becoming a society of practical aeronautical engineers.

It may be admitted that it is difficult to draw a hard and fast line between these two alternatives. The division does exist however. The Society has attempted to combine both functions and has failed dismally. It has become to a very large extent a body controlled by a set of extremely well-meaning individuals, the majority of whom are neither practical engineers nor scientists of any very great capacity, but who are nearly all of them members of one or the other of those Government Departments which have assumed the control of aviation on both the scientific and the practical side to-day.

With relatively few exceptions the proceedings of the

Mr. ALAN COBHAM'S
Message of Appreciation of

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Cord Tyres

"After a 17,000 miles flight to Rangoon via India and Near East and through varying climates of heat and cold, over rough Aerodromes (including towing Aeroplane 50 miles on bad road), your Palmer Tyres on De Havilland Fifty Machine have given no trouble whatsoever and have been entirely satisfactory."

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Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
600×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
,,	79	178.	44.45	Central
,,	100	178.	38.09	132/46
,,	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
700×100	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
†Wheel No. 169 is fitted with Ball Bearings.

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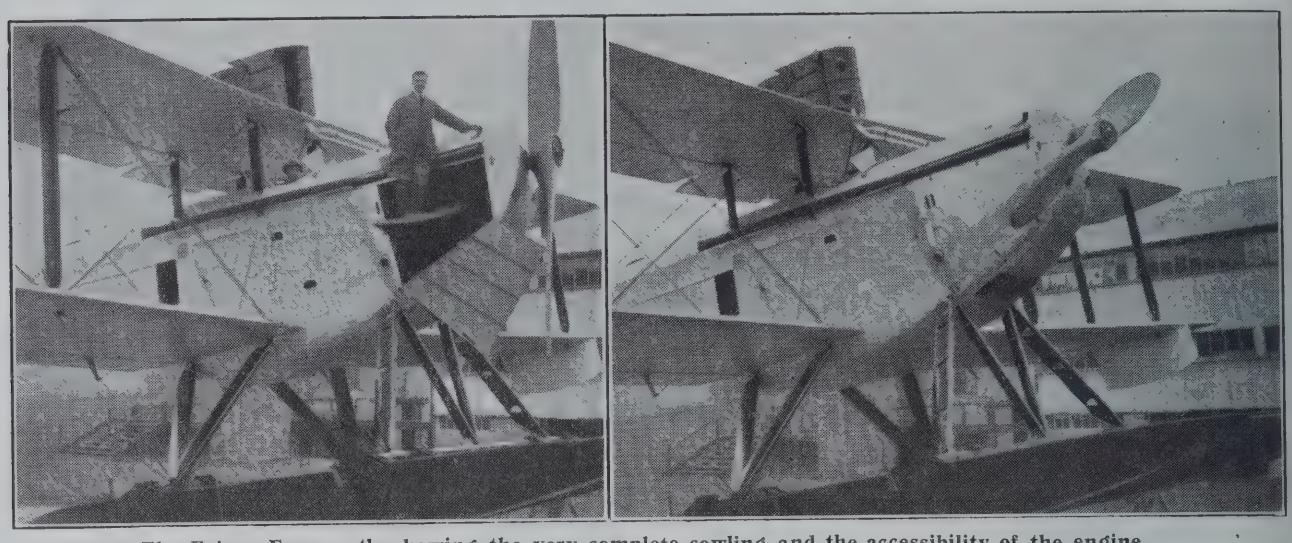
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INK



The Fairey Freemantle showing the very complete cowling and the accessibility of the engine.

Society for the past few years have consisted of accounts of experimental or research work carried out at the public expense, which have been of insufficient scientific interest to attract much attention in purely scientific circles and neither sufficiently convincing nor sufficiently detailed to be of practical importance to aircraft designers who incidentally are usually provided—in confidence—with considerably more detailed information on the subjects in question than the lecturer is permitted publicly to disclose.

These papers serve no useful purpose except possibly that of advertising the personnel of the official experimental departments, but they do set up a pseudo-highbrow atmosphere at the Society's meetings which discourages many aeronautical engineers from attending their meetings and from offering papers of a more practically interesting and less obscure nature.

The Society has always officially taken an attitude of suspicion and hostility towards the Institution of Aeronautical Engineers, but that body has definitely attempted to deal with the practical side of aeronautical engineering in a manner which has been largely neglected by the R.Ae.S. without in any way encroaching on the latter's "scientific" preserves. It is true that recently the R.Ae.S. has imitated the I.Ae.E. in more ways than one and is now to some extent overlapping the Institution's field of work.

It is true that certain proposals for the amalgamation of the two societies have been under consideration. In view of the present financial position of both bodies, practical considerations suggest this as the best way out of their difficulties. But the amalgamation will be strenuously opposed by some members of the Institution unless adequate guarantees are forthcoming that the united bodies shall not become another mutual admiration society for Air Ministry and N.P.L. officials.

Incidentally it may be remarked that the publication by the R.Ae.S. of the fact that such negotiations are in progress is somewhat unexpected. So far as the Institution is concerned no official information has yet been supplied to the members, and it is believed that the Council of the Institution had regarded the negotiations as being at present in a confidential stage.—W. H. S.

The Fairey Freemantle.

The Fairey Freemantle is a large single-engined float seaplane which has recently been designed for the Civil Aviation Department of the Air Ministry by the Fairey Aviation Co. Ltd. It is fitted with a 650 h.p. Rolls-Royce Condor engine and it carries normally sufficient fuel for a non-stop flight of 1,100 miles, and this can be increased to extend the range to 1,700 miles should the occasion demand. In order that all the fuselage space shall be available for other purposes, the petrol tanks are carried on the floats. Ample accommodation is provided for a crew of five. The fuselage forward is planked with solid mahogany in place of the usual fabric covering, and sleeping quarters fitted with a complete heating installation are provided.

A New Bleriot.

The most recent product of the Blériot firm, the B.117, has just made preliminary flight tests at Buc. This machine is a twin-engine cantilever monoplane, designed for high-altitude fighting, specially as an escort for day-bomber squadrons. The machine has a single central fuselage with two engine nacelles arranged mainly below the wing. In the tail of each nacelle is arranged a machine-gun and gunner's seat, and there is a front gun position in the nose of the fuselage.

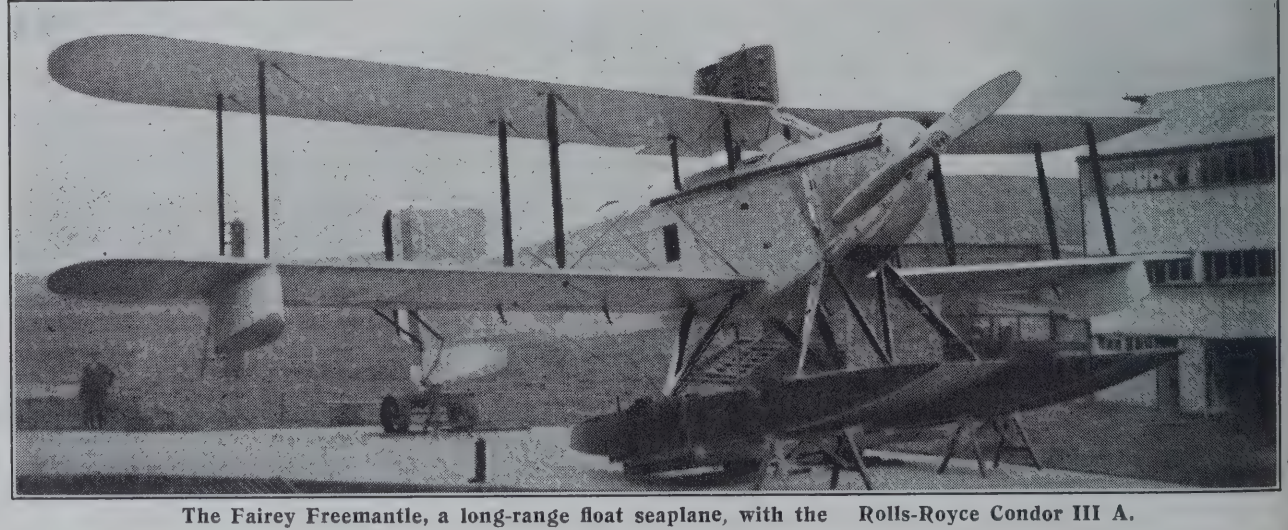
The machine has therefore an all-round field of fire.

The wing is of a thick and apparently nearly flat-bottomed section, tapering both in thickness and in chord from engine nacelle to tip. They are built in three sections—two extensions and a centre section which is built into the fuselage and the two engine nacelles. One two-wheeled undercarriage of the Vee type is fitted below each nacelle.

The engines are 400 h.p. Lorraine-Dietrich.

SPECIFICATION.

Span ... 23.0 m. (75 ft. 5 in.)	Wing loading ... 45.1 kg./m² (92.6 lbs./sq. ft.)
Length 15.5 m. (50 ft. 10 in.)	Power loading ... 5.2 kg./h.p. (11.8 lbs./h.p.)
Wing area 93 m². (1,000 sq. ft.)	Est. speed at 4,000 m. (13,200 ft.) 190 km.h. (118 m.p.h.)
Weight, empty 2,860 kg. (6,350 lbs.)	Est. ceiling 6,000 m. (19,700 ft.)
Weight, loaded 4,200 kg. (9,260 lbs.)	



The Fairey Freemantle, a long-range float seaplane, with the Rolls-Royce Condor III A.



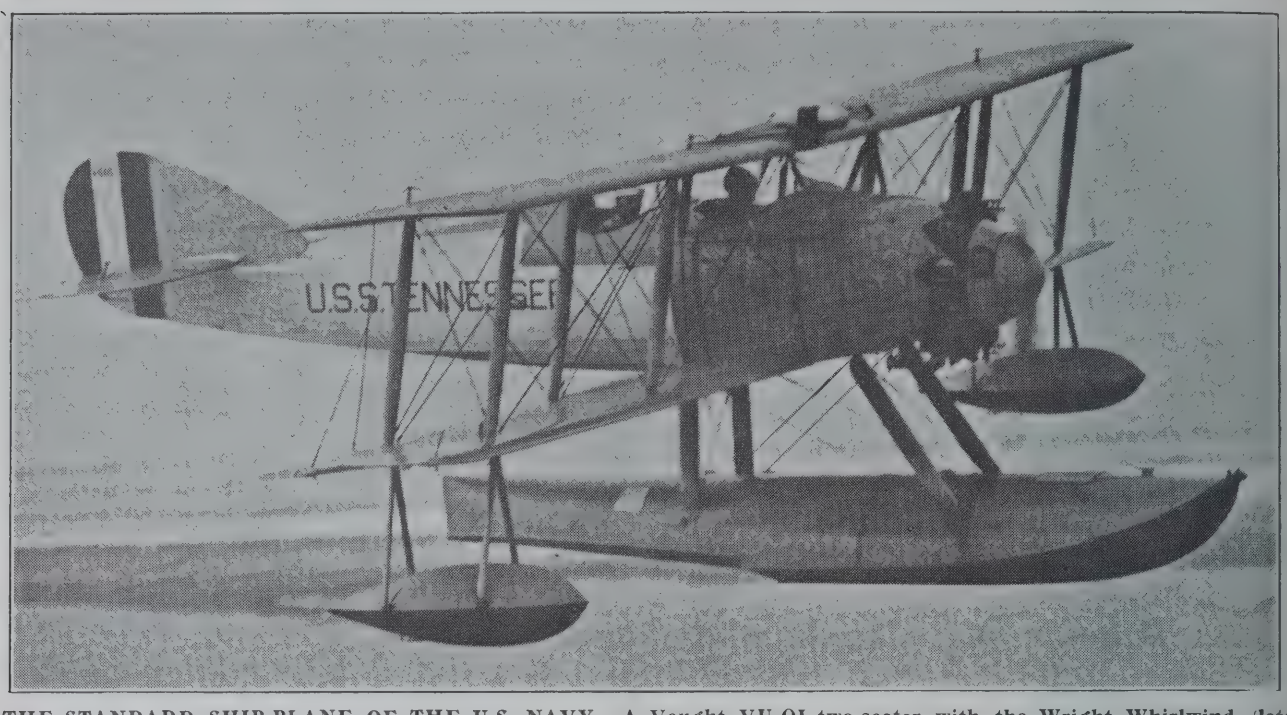
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THE STANDARD SHIP-PLANE OF THE U.S. NAVY.—A Vought VU-OI two-seater with the Wright Whirlwind (late J3) engine of 200 h.p.

Imperial Airway Policy.

The following letter has been received from an engineer who has also had experience of public transport operations :—

Sir,—The leading article in THE AEROPLANE of Apr. 1, dealing with the affairs of Imperial Airways Ltd., hits the right nail on the correct head more than once.

It cannot be too widely realised that aircraft have at the present moment two distinct fields of commercial operation.

One of these is the opening up of communications in districts where they have no competitors more rapid than horse, foot or water transport. Their ability to provide rapid, comfortable, and, on the whole, safe transit under these conditions without any vast capital expenditure on the preparation of the route makes it possible to foresee early commercial success for undertakings of this nature. In fact experience in Australia and other backward districts proves that commercial success can be obtained practically at once in such conditions.

The other field is on routes already exploited by modern high-speed railway and steamship transport where traffic in great volume already exists. This field promises eventually to give the greatest commercial returns, but air transport on such routes has to compete with services which are already rapid, comfortable and amazingly safe and reliable. The aeroplane on such services loses all of its advantages except that of speed. On such routes a large capital expenditure must be faced in order to provide terminal aerodromes in positions as accessible as railway terminals now are—otherwise the speed advantage of air transport is largely foregone. Risks which will cheerfully be faced by a traveller in Australia in order to save a week's tramp through the bush will not be faced by the traveller from London to Paris in order to save three hours of safe and comfortable travelling.

The result is that air line work such as is now being carried on by Imperial Airways can only be regarded as development work which if it be wisely carried out may be expected to lead in five years or so to profitable business. In other words, Imperial Airways must regard their first five years of existence as a period in which money must be invested in acquiring knowledge and experience and in developing the technique of commercial aviation.

The present Chairman of that Company has characteristics well known to the general public. His past record does not suggest that he possesses the type of mind that is willing to sink cash in the present for the sake of the future. It is possible—personally I think it practically certain—that the fact that Imperial Airways is largely supported by public moneys and has a representative of H.M. Government on its board makes it impossible for that concern to carry out development work of this type with any efficiency.

If this is the case the sooner the present Chairman lays his axe to the root of the firm the better. The development of airways by private enterprise will certainly if slowly lead to the results which intelligent use of the resources of Imperial Airways could effect more rapidly. But unintelligent and short-sighted stinginess in the direction of Imperial Airways will inevitably retard progress seriously.

If however Imperial Airways is to carry on the work which lies before it efficiently and effectively the qualities which Sir Eric Geddes possesses in so large a degree are not those which are required to direct its policy.

(Signed) "EXPERENTIA DOCET."

Company Notice.

THE AEROPLANE AND GENERAL PUBLISHING COMPANY LTD.—Satisfaction in full on Mar. 17, 1925, of debentures dated June 14, 1913, securing £1,000.

The Napier Staff Dinner.

The firm of D. Napier and Son Ltd., the famous aero engine and motor-car constructors, held their staff dinner at the Criterion Restaurant on Saturday, Mar. 28, with Mr. H. T. Vane, C.B.E., the Managing Director, in the Chair, supported by Sir Harry Brittain, M.P., Mr. George Pate, and Mr. Henry Cooke.

A telegram was read from Mr. Montague S. Napier, the Chairman of the Company, regretting his inability to be present, owing to his absence abroad, but thanking the staff for their hard work and wishing them an enjoyable evening.

The speeches, of which there were only a few, were of a particularly high order.

Mr. Hutchinson, the Progress Manager, in proposing the Napier Company, briefly outlined the history of the firm, going back as it does to the year 1808, drawing his hearers' attention to the fact that in all they undertook they had excelled until now with their famous aero engines they were still excelling in their business.

Sir Harry Brittain replied on behalf of the Board, thanking the staff for the admirable way in which they had worked and the loyalty and skill they had displayed.

Mr. Pate, the Chief Engineer of the Company, and also a Director, delved into the future, and whilst with true Scottish caution he did not attempt to visualise what the aero engine of the future would be, he was confident of the fact that the Napier Company, as now, would always be ahead, developing and progressing, provided they kept to their present lines of "honesty of purpose, perseverance and hard work."

Mr. Allen, the Works Manager, proposed the health of Mr. Vane, referring briefly to how much the success of the Firm rested on his able conduct of its affairs, the toast being received enthusiastically with musical honours.

Mr. Vane replied, saying how much he appreciated what had been said, stating that by a happy coincidence the dinner was taking place on the day that the result of the last year's work was published which showed that the firm has just completed the best year that he had known. He thanked the staff for their loyal co-operation and hard work which had enabled them to successfully surmount the difficulties experienced a few years ago, and finished up with an optimistic note as to the future of the Napier Company and the aircraft industry.

A musical entertainment was provided during the evening.

A Russian Aeroplane Accident.

On Mar. 23 a Junkers monoplane while flying from Tiflis to Sochum, caught fire in mid-air and crashed between Tiflis and Baku. All the occupants were killed. These included the two pilots, Shpil and Sagoradze, Maisnikoff, a member of the Presidium of the Central Executive Committee of the Union of Soviet Republics, member of the Military Revolutionary Council, Vice-President of the Trans-Caucasian Council of the People's Commissaries, and murderer of the Grand Duke Michael; Mogilievsky, President Extraordinary of the Trans-Caucasian Commission and Atarbekoff, representative of the Posts and Telegraphs Commissariat.

[The accident is of course regrettable, but since it happened, one may be thankful that its load was of a nature which may so well be spared.]

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View of the Westland Works photographed from a Westland Aeroplane.

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The Westland Aircraft Works have been privileged to design and construct machines of all types for the British Government, and the same skill in design and manufacture has been applied to their commercial Aircraft.

The personnel includes an expert staff which is available to consider specifications for Aircraft required by Foreign and Dominion Governments or Private Customers.

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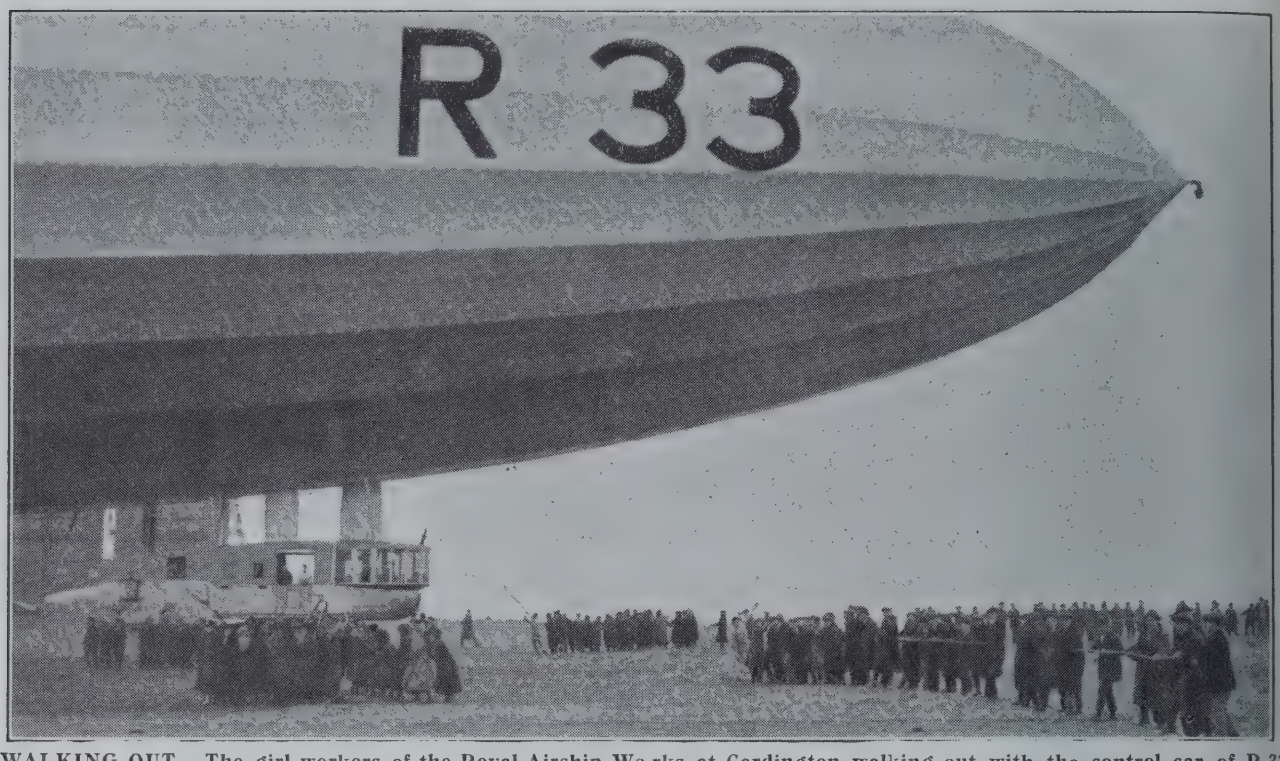
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YEOVIL.

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WALKING OUT.—The girl workers of the Royal Airship Wo rks at Cardington walking out with the control car of R.33, on the morning of Apr. 1, when she made her first appeara nce after her four-year internment.

The Passing of Arthir by the A.I.D.

(Without apologies to Tennyson.)

So all day long the noise of bustle roll'd
Among the pastures by the river Ouse
Until the Ar-thir-ty-three's personnel
Had flocked in Cardington about their toy,
The Airship, who because his rust was deep
The bold Sir Peregrine uplifted him
And had him scrubbed and polished good as new.
Then spake the Arthir to Sir Peregrine
"The sequel of to-day, re-solders all
This goodliest Fellowes ship. And famous knuts
Will once again break records. I think we
Shall often now whenever we desire
Delight our souls with talk of airship shop
Walking about the workshops and the sheds
Of Cardington as in the days that were.
I prosper by this people which I made
For Burney sware that I should come again.
To fly once more. But let what will be, be.
I was so deeply smitten through the helm.
(Oh no that wasn't me, I'm getting mixed.
'Twas cousin 36 whose nose was bashed.)
But now I'm good as new and nice and clean
Clothed in white samite, mystic, wonderful.
Thou therefore get some brand new hydrogen
Which was my pride. But now delay thee not.
And pump it hard into the middle me.
Watch what thou seest and lightly top me up."
To him replied the bold Sir Peregrine,
"It was not meet my ship to leave thee thus,
Aidless, alone and eaten thro' with mice,
A little thing may harm a rusty ship.
Yet I thy chest will now inflate quite full
Watch what I see and lightly top thee up."

.

Then spoke the Arthir drawing thicker breath,
"I feel so fit and fat and fine and full
Now out and off to Pulham let us go."
So saying from the pavement he half rose
And in the dawn athwart the place of sheds
Where lay the mighty frames of ancient ships.
He strongly wheel'd and circled. The great ship
Made lightnings in the splendour of the sun
As floating round and round. Then heading out
By zig-zag paths the Pulham Port was made.
They tied him slow, firm to the mooring mast.

More Passing.

The R.33 left the mooring mast at Pulham soon after 20.00 hrs. on Monday, Apr. 6, and after an extended cruise passed over London between 01.00 and 02.00 hrs. on Tuesday. At 01.30 she passed over the Crystal Palace and later reached Pulham, where she continued to cruise.

The Schneider Trophy.

Great Britain looks like having a representative team to send to Baltimore for the Schneider Trophy Competition in October.

Two new Gloucestershire racers are being built, one of which, one understands, will be entered for the Pulitzer Trophy. The sister machine to last year's Schneider machine is now at Martlesham, where it will be, or may be now being, tested as a land machine by Mr. Larry Carter. She will probably go with the team as a reserve.

A float monoplane, designed by Mr. Mitchell, is being built for the Schneider Competition by the Supermarine Aviation Works Ltd. It will be flown by Mr. Henri Biard.

All these machines will have direct-drive Napier engines likely to develop over 600 h.p.

As the American Curtiss has done 240 m.p.h. as a seaplane and the French Ferbois 280 m.p.h. as a land machine, it may be taken for granted that these machines will have to do nearly 300 m.p.h. as land machines, and about 250 m.p.h. as seaplanes, otherwise it will not be worth the time or the money spent in building them. Though it might be well worth while to run one machine all out, in the hopes of its completing the course, while the other is held down to a schedule some ten or twenty m.p.h. slower so that it will finish the course in the event of the competitors of other nations eliminating themselves, much as Lasne on an old Nieuport won the last Deutsch Cup.

Another Welcome.

The members of the India-and-back expedition, Sir Sefton Brancker, Mr. Alan Cobham and Mr. A. B. Elliott, were entertained to dinner by the Directors of the De Havilland Aircraft Company on Monday evening Mar. 30. Those present included Geoffrey de Havilland and Messrs. L. L. Walker, F. N. St. Barbe, W. E. Nixon, F. F. Hearle, A. E. Hagg and A. Brant. After dinner the company visited the London Hippodrome. The three "air surveyors" were presented by the de Havilland Company with suitably-inscribed wallets.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 11; Tuesday, 14; Wednesday, 15; Thursday, 16; Friday, 15; Saturday, 14; Sunday, 7.

IMPERIAL AIRWAYS, LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 50, passengers 201, freight 6 tons.

AIR UNION:
Paris—London: Machines 28, passengers 105, freight 7½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 34.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 1, passengers 3.

SPECIAL MACHINE:
De Havilland Hire: Machine 1, passenger 1.

Total number of trips by British machines: 51, carrying 202 passengers. Foreign machines: 41, carrying 142 passengers.

Comparative Figures:

For week ending Apr. 5:
Machines, 92; Passengers, 344; Crews, 116; Total personnel, 460.

Corresponding week, 1924:
Machines, 44; Passengers, 179; Crews, 76; Total personnel, 255.

Corresponding week, 1923:
Machines, 93; Passengers, 417; Crews, 156; Total personnel, 573.

Corresponding week, 1922:
Machines, 60; Passengers, 137; Crews, 100; Total personnel, 237.

Corresponding week, 1921:
Machines, 58; Passengers, 210; Crews, 78; Total personnel, 288.

Corresponding week, 1920:
Machines, 36; Passengers, 45; Crews, 40; Total personnel, 85.

Croydon Notes.

Croydon Aerodrome is now theoretically easier of access from London owing to the fact that that wonderful institution, the Southern Railway, have electrified the line from Victoria to Sutton, so that, again in theory, there is a fast and frequent train service to Waddon.

The chief result of this improvement seems to be that instead of taking 30 minutes to reach Waddon the trains now take 75 minutes and people who live near the line have their electric bells rung by induction from time to time. This seems to open up vast prospects for someone to invent an electric motor which will run by induction. Just think how much money could be saved if Imperial Airways were to run their car service between London and the Aerodrome using the power provided by the Croydon and the Metropolitan Tramways and the Southern Railway. They would probably be able to pay their beloved dividends.

And then again when and if the Loth cable is laid between Croydon and the other air termini the very machines could be run by induction.

This idea at once conjures up pictures of Mr. Shaw going round with a pair of insulated scissors cutting all power cables.

Talking of induction one is told that the reason for shifting 2LO from Marconi House to Selfridge's was that it interfered with the Air Ministry's wireless and, one is told, even interfered with the Air Ministry's telephones by induction. There is a pathetic story of an Air Ministry official trying to tell a friend over the telephone his latest smoking-room story and instead being told a bedroom story by an "uncle."

This brings one to the British Broadcasting Company's latest show of intelligence. For some time they have been having trouble with their new transmitting station. When this was first started a number of people complained of bad reception so the B.B.C. went back to the old station while they improved the new.

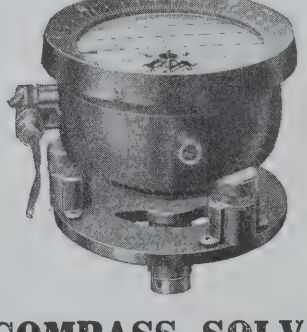
Judging by reception results one is almost forced to believe that in order to make the new station seem vastly better they sent out their last transmissions from the old station about as badly as they could. Why *does* the B.B.C. think that the intelligence of listeners is of the same order as its own collective intelligence?

There is not much about Croydon in these notes but after all it is Easter and holiday time. So "let what will be, be."—G. D.

Northern Air Lines, Limited.

Northern Air Lines Ltd. have once again completed a 100 per cent. efficiency week. Every machine has run to schedule with a paying load. Mr. MacIntosh, as chief pilot, is flying the D.H.50, and a Mr. McDonough is the second pilot.

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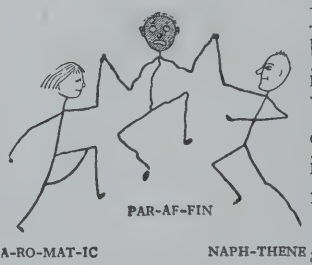
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A Serial Story—Chapter III

AS previously stated, the three members of the Hy-dro-car-bon family, A-ro-mat-ic, Naph-thene, and Par-af-fin, are well known to-day in motoring circles. In fact, motors cannot get along without them.

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PERSONAL NOTICES.

DEATH.

BERRIDGE.—On March 30, at Quetta, India, as the result of a flying accident, Thomas Donald Berridge, Flg. Off., No. 28 (Army Co-operation) Sqdn., R.A.F.

Mr. Berridge passed out of Cranwell in December, 1922, and went to the School of Army Co-operation, R.A.F., Old Sarum. He was posted to No. 16 Sqdn. on Apr. 1, 1924, and to No. 28 Sqdn., Quetta, in September, 1924. At Cranwell he won the feather-weight boxing championship in 1921.

FORTHCOMING MARRIAGES.

BAGNELLE—GRENFELL.—The engagement is announced between Harry John Bagnelle, R.A.F., son of Mr. and Mrs. L. H. Bagnelle, of Enfield Lock, and Lilian Pearl, eldest daughter of the late Mr. and Mrs. E. Grenfell, of St. Stephen's House, Enfield Wash, Middlesex.

BETT—TOWGOOD.—The engagement is announced between Flg. Off. Patrick John Bett, R.A.F., late the Gordon Highlanders, eldest son of Mr. and Mrs. David Gordon Bett, of Hasketon, Woodbridge, Suffolk, and Ellen Geraldine, only daughter of Mr. and Mrs. Robert L. Towgood, of Farm Hall, Godmanchester, Huntingdon.

BRODIE—COATES.—The marriage of Flt. Lt. Ian E. Brodie (late R.N.), only son of Mr. and Mrs. W. A. Brodie, of La Cima, San Remo, and Heathside, Totland Bay, with Mary Gonville, youngest daughter of the late Mr. and Mrs. William Coristine Coates, of Knockanally, co. Kildare, and niece of Mrs. Brodie, J.P., of Fernhill, Wootton Bridge, will take place on Apr. 15.

COURTENAY—BARROW.—The engagement is announced between Capt. H. A. Courtenay, D.F.C., R.A.S.C., youngest son of the Rev. and Mrs. Charles Courtenay, of Parkstone, Dorsetshire, and Grace Mary, youngest daughter of Mr. R. P. Barrow, late I.C.S., of Bovey Tracey, Devonshire. The marriage will take place shortly at Bangalore (India).

LEWIS—ROBERTSON.—The engagement is announced between Gwilym H. Lewis, D.F.C. (late R.F.C.), of 1a, Lower Grosvenor Place, S.W.1, son of Mr. and Mrs. Hugh Lewis, of St. David's, Noctorum, Birkenhead, and Christian second daughter of Mr. and Mrs. H. W. Robertson, of Fintry, Brook, Surrey.

BIRTHS.

ALFORD.—On Apr. 3, at Spittlegate, Grantham, the wife of Flt. Lt. F. R. Alford, M.C., R.A.F.—a daughter.

MAYCOCK.—On Apr. 6, at Thornbury, Nelson Road, Southsea, to the wife of Sq. Ldr. R. B. Maycock, O.B.E., R.A.F.—a daughter.

ROWAN.—On Mar. 31, at Ford, Salisbury, to the wife of Flt. Lt. Rowan—a son.

WEARE.—On Mar. 31, at Ferndale Lodge, Tunbridge Wells, to the wife of Flt. Lt. F. G. C. Weare, M.C., R.A.F. (Retired)—a son.

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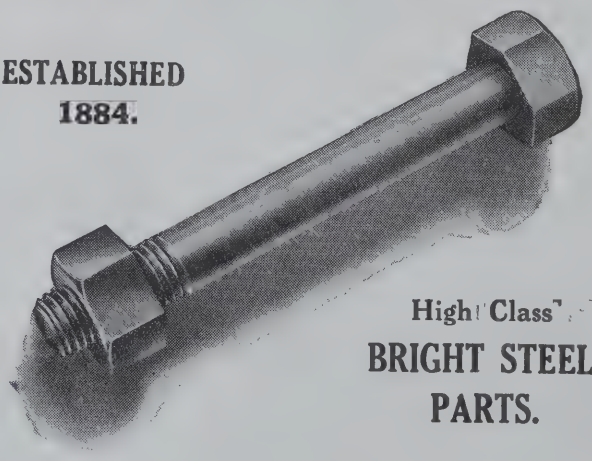
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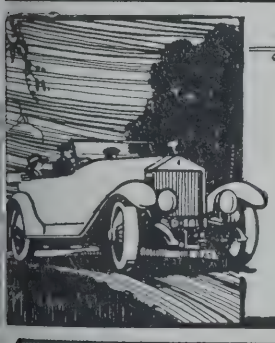
Edited by C. G. Grey

Vol. XXVIII. No. 15. SIXPENCE WEEKLY. [Registered at the G P O as a Newspaper

ON THE SQUARE.



UXBRIDGE:—A recruits' parade at the R.A.F. Depot, Uxbridge, which is commanded by Group Capt. I. M. Bonham-Carter, C.B., O.B.E.

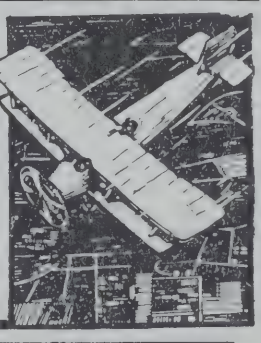


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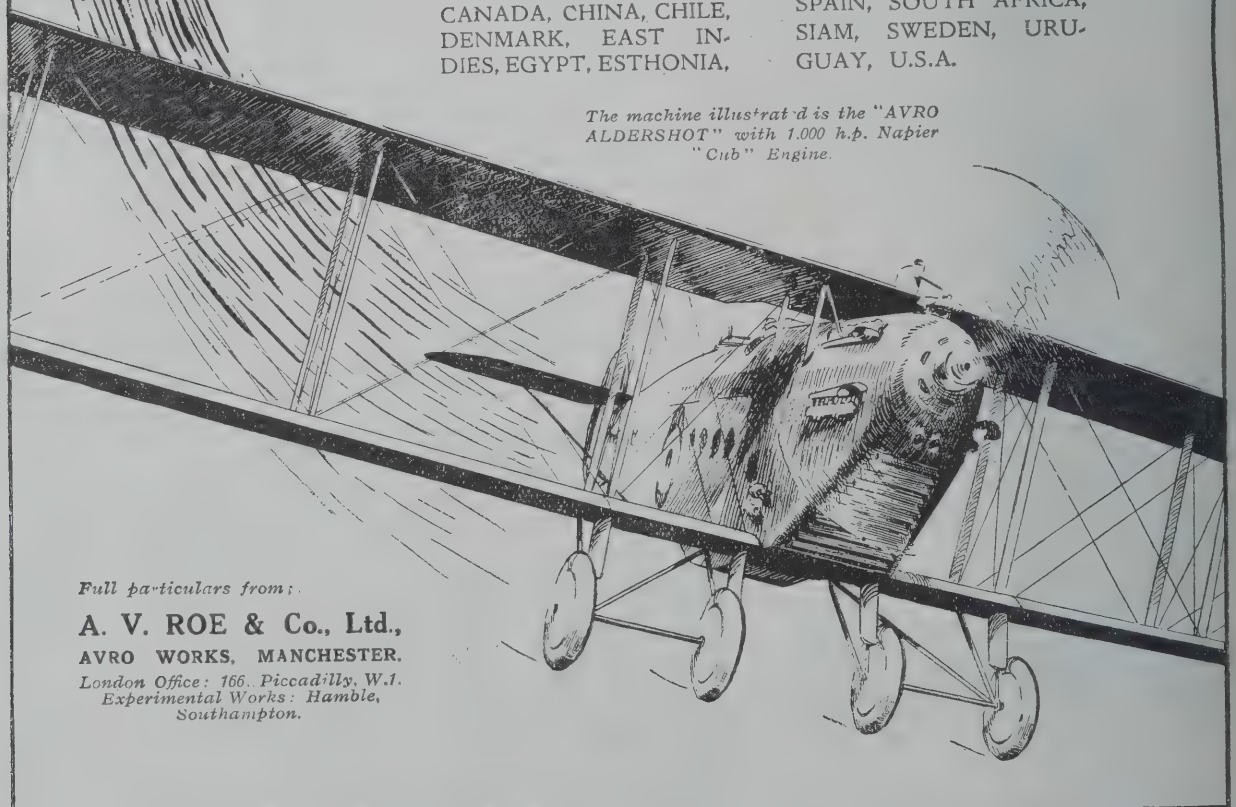
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APRIL 15, 1925.

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Incorporating

Aeronautical Engineering

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ON IMPERIAL SAFETY.—II.

Air Defence Fallacies.

However, to return to Mr. Harper, one finds it necessary to expose certain other fallacies in his arguments. For example he makes the statement that, "The last War showed that it is impossible to stop night bombers by means of anti-aircraft gun fire."

As a matter of fact the London Air Defence Area proved that anti-aircraft gun fire, assisted by "balloon aprons" to keep enemy aircraft above the 9,000 foot level, was the most effective form of defence at night. In the daytime our patrols of single-seat fighters were able to find the enemy but at night they were hardly ever able to do so even with the help of our searchlights.

One believes that statistics show that the majority of enemy aircraft brought down in this country in both day and night attacks were sunk by gunfire and not by aeroplanes. And one believes firmly that for purely defensive purposes guns on the ground with a proper organisation of searchlights and observation posts are a better defence than are aircraft; on the good old coast-defence principle that a gun in a fort is worth two in a ship.

Nevertheless all must agree with Mr. Harper's main idea which is that we need a larger and better-equipped Air Force not only for the defence of London but for the defence of the Empire as a whole.

A Good Case Ill Put.

This brings us to the arguments of the Aeronautical Correspondent of *The Morning Post*, who seems to have absorbed *The Morning Post* atmosphere so thoroughly as to have acquired that estimable paper's curious faculty for presenting a very good case in such a way that the arguments in its favour can be very easily upset.

In his very first article he makes play with "poor quality machines." But one gives him full marks for his excellent epigram "Evil administration corrupts good aeroplanes." The phrase should stick to our Air Ministry experts for the term of their natural lives. Unfortunately that is precisely the point which he does *not* proceed to argue.

The fact of the matter is that the quality of British aeroplanes is excellent, as one is eternally arguing in this paper. The trouble with them is that very good aeroplanes are corrupted by evil administration on the part of the minor technical people in the Air Ministry and at Farnborough.

The higher officials at the Air Ministry are fully alive to that fact, as is proved by the encouragement which they have given as individuals to a number of firms in the British Aircraft Industry to build experimental aeroplanes absolutely independently of the Air Ministry experts and free from interference with either design or construction. Whether all the firms who have been thus encouraged have summoned up enough courage to speculate the profits of the past year in building independent designs one cannot say but certainly several firms have done so with results which must be exceedingly galling to the experts who would love to stick their clumsy fingers in the designers' pie.

There has hardly been time so far for the results of these experiments to perform in public but one gathers that certain of them show considerable promise. So with a little further encouragement we may in due course produce in this country machines of all types necessary for war which shall be better than those of other countries.

What We Need.

Unfortunately at the present moment we do not happen to possess fighting aircraft which in fact perform better than those produced abroad. And we shall not produce such craft until (a) trade designers and constructors have an absolutely free hand to produce what they like, given certain definite military requirements, and until (b) aircraft constructors themselves are prepared to stand or fall by the performances of their products just as are manufacturers in any other business.

Quite a long time ago one was told that what the Air Force really wants, as the kind of offensive backbone of the Service, is a bombing machine which will fly at 120 miles an hour at a height of 20,000 feet carrying fuel for a flight of seven hours or so and at least a 500 lb. bomb, or smaller bombs to that weight. Now that does not seem to be an unduly difficult proposition for any thoroughly competent designer. But so far as one can discover no air force in the World has yet got a machine with precisely that performance, although it was set as a kind of standard before the end of the War in 1918.

Such a machine could certainly be built, but one doubts whether it can be produced if every sub-department in our precious Air Ministry is allowed to load it with its own particular gadgets.

Departmental Ways.

Some time near the end of the War in 1918 *Punch*, as always the greatest recorder of contemporary history, published a picture by the inimitable *Fougasse* showing first a British soldier in ordinary Service kit. In the next picture a hand is holding out to him a tin hat or "battle-bowler." In the next picture he appears with a tin hat and the hand is presenting to him a coil of barbed wire. In the next picture the hand is giving him a basket of carrier pigeons, and so on for about six or eight pictures till the unfortunate soldier is seen staggering along with bent knees under the burden of his equipment. In the last picture one sees a German's head on the horizon, all the official gadgets strewn around in the foreground and Mr. Thomas Atkins prancing into action bare-headed and in his shirt-sleeves, armed solely with a rifle and bandolier.

Something very like that is what happens to officially hampered aircraft on active service. It even happens at aerodromes where machines are flown for practice whether for air work or for Fleet co-operation or Army co-operation. Machines which stagger uncomfortably through the air when they arrive after passing the official tests have all their departmental paraphernalia removed in the squadron sheds and thereafter proceed to leap nimbly into the atmosphere stripped naked except for such weapons as they would actually need when following their lawful occasions in real war.

One suggests that it might be just as well to start the stripping operations when the machine is in the experimental stage and not when the British Taxpayer has paid for all the unnecessary gadgets, which generally end their career in a corner of an aerodrome shed.

At the same time one does believe that there is plenty of room for improvement in the actual design of our aircraft. We are nowhere near knowing what can be done with improved wing sections and wing flaps and slots—as one has argued for years. And there are very few aeroplanes either of British or any other design which could not be "cleaned up" with advantage so that their performance might be improved by decreasing their resistance to progress through the air.

Mis-Understandings.

Incidentally when criticising the designs of aircraft one finds that one is frequently misunderstood or misrepresented by the very people for whose benefit one is arguing.

For example, representations have been made that a paragraph which appeared in The Aeroplane of Mar. 25 in the article "On Engineers and the R.A.F." is liable to give the impression abroad that this paper has not a very high opinion of the ability of the designers and constructors of British aircraft and that consequently the said paragraph is liable to do harm to the prestige of British aircraft and aero-engines abroad. The paragraph to which objection is taken reads as follows:—

> Moreover there is a crying need at the Air Ministry itself for properly trained engineer officers to take charge of the technical work at the Ministry. At the present stage of development nearly all aircraft design and aero-engine design is still so amazingly amateurish from the point of view of the trained engineer that infantry officers and watch-keeping naval officers who have served for eight or nine or ten years in the Flying Services probably know quite enough to compete with such engineering knowledge as is possessed by the so-called aeronautical engineers of the Aircraft Industry—for, with a few notable exceptions, the aeronautical engineers themselves are only amateurs compared with mechanical, civil and electrical engineers in other industries.

One particular critic has endeavoured to refute one's opinions by setting forth in print the names of certain firms

as examples of real engineering in the British Aircraft Industry. Unfortunately for himself he has fixed on some of the most notable of the exceptions to which one referred.

Possibly one might have been more specific in one's remarks. But if one had to write all one's articles for the benefit of people who, so to speak, can only understand stories in words of one syllable, and had to explain exactly what every phrase meant, so that even the least educated and least intelligent could not misinterpret or misrepresent one's meaning, one fears that these articles would occupy still greater space than they do at present. And anyhow one suggests that it is better to express an opinion which may be mis-represented than never to express an opinion at all, or never to have an opinion to express.

One would draw the attention of those who have apparently misread the paragraph to the fact that they miss two points. Firstly the phrase " nearly all aircraft design and aero-engine design " applies, and was intended to apply, just as much to foreign constructors as to British constructors, and rather more so.

Nothing could be more amazingly amateurish than a great deal of French design both in wood and metal. A lot French metal construction looks rather more like a Meccano toy than a grown-up engineering structure, and the way in which timber is used and the way in which a good deal of bracing is done in a good many French machines would give any A.I.D. inspector the horrors. Much the same remarks apply to many American machines and to German machines as well. In a general way, all round in all countries, stick and wire and fabric construction is used to an enormous extent. And surely such methods should have disappeared years ago if all aircraft designers had been engineers.

Engineering *and* Engineering.

Aeronautical engineering, so-called, has only existed for twelve or fourteen years—or even less if one looks back at most of the war-time designs up to the year 1916. And so one can hardly class as much above the enthusiastic amateur anybody whose experience has been gained entirely in the aircraft business.

That is why one used the phrase " With a few notable exceptions the aeronautical engineers themselves are only amateurs." Mechanical, civil and by this time to a very great extent electrical engineering have become exact sciences. But none can claim that aeronautical engineering is an exact science. And until it rises to that its practitioners can hardly claim to be full-blown engineers.

There are notable exceptions in the aircraft industries of all nations, in the persons of men who were trained engineers before anybody thought of flying. And one was very careful to leave room in the minds of readers of that paragraph for the idea that there are trained engineers in the aircraft industries of the World.

Aero-Engines.

So far as aero-engines are specifically concerned one hopes that nobody, least of all aero-engine designers themselves, is under the impression that any aero-engine of to-day approximates to its ultimate form. There is no doubt that British aero-engines are as well designed in detail and as well made by British workmanship and are composed of material as good as those in any country in the World. In fact, judging by weight for power and actual performances, outside pure record-breaking, it would seem that British aero-engines are to-day rather better than those of any other country.

But for the sake of aviation as a commercial proposition one sincerely hopes that all aero-engine designers have in mind further developments which will increase the efficiency of engines enormously and so reduce the cost of running them.

It has been argued that a large number of aeronautical engineers are entitled to be reckoned along with engineers of other professions because so many of them have served their time in the motor trade. It may be granted that motor-cars as designed and constructed in all countries are very useful vehicles. But so long as people insist on putting the back-gear of a lathe in a somewhat refined form inside an aluminium case and using it for changing gears on automobiles, trusting entirely to the skill of the driver to avoid wrecking the contraption, one can scarcely regard even automobile designers as being first-class engineers.

Therefore on the whole one pleads that the objectionable paragraph is thoroughly justified, so long as the reader of it has a perfectly clear idea that it applies just as much to the aircraft designers of all other countries as to British designers and that owing to the high quality of British workmanship and the care which is taken in British factories to secure the very best quality of material, British aircraft and aero-engines are on the whole very much superior in quality to those of any other nation. So that is that.

Air Defence.

In the previous section of this article an endeavour was made to point out the importance of properly designed aircraft, in both the qualities of construction and performance, for the Royal Air Force not only as our First Line of Defence but as the First Line of Offence in any part of the Empire.

We have heard a great deal in Parliament and in various public speeches at the numerous public or semi-public functions which have occurred lately about defensive aircraft. To judge by these speeches one would imagine that the chief function of the R.A.F. was to stay within the British Isles and prevent hostile aircraft from crossing the coast-line. In fact the general attitude of mind of all these speech-makers appears to be that in the next war we are going to have some curious kind of aerial trench-warfare with our Air Force tied down to home defence aerodromes.

So far nobody has had the courage to tell the British public that in the first place there is not likely to be any attack on the British Isles at all and that secondly and therefore the Home Defence Force will almost certainly have to do its defending of British interests somewhere in Central Europe while the regular Air Force units will probably be fighting somewhere in the Pacific or in the Middle East or in Australia. The function of the Home Defence Force will almost certainly be not the defence of the Englishman's Home but the defence of the Home of Western Civilisation, which is several degrees East of Greenwich.

Therefore it seems unlikely that there will be much need in the next war for short-range comparatively slow-speed single-seat fighters or for short-range bombers. What we are more likely to need will be what our American cousins call " pursuit ships " of very high speed and fairly long range as well as long-range high-speed bombers, not necessarily carrying an enormous weight of bombs each, but rather machines in large numbers each carrying a smaller load of bombs.

War Material.

Therefore the question which arises is how we are to get those machines in time of war. It is obvious that we shall need them in very large quantities, for the 56 squadrons or so which we are promised six years hence for the Home Defence Force, and the odd 30 or 40 or 50 squadrons which might be formed by that time for the rest of the R.A.F. (there are only 18 abroad at the present moment) would be neither here not there in a great war in which the whole British Empire was concerned.

The next war is going to be a very much bigger affair than was the last one and even then we had something like 200 squadrons so it is fairly evident that instead of thinking about producing roughly a hundred squadrons six years hence we ought to be laying the foundations for the production of something like 500 squadrons very possibly inside five years from now.

Now if one looks at all the various types of aeroplanes which are at present being produced for the R.A.F., leaving out all the old re-conditioned wartime types and considering only those which are of recent design and are intended to re-equip existing squadrons, one finds that nearly all of them are constructed very largely of wood. And the one outstanding fact about mass-production of aircraft in the event of a great war is that they cannot be built of wood for the all-sufficient reason that there is not enough wood obtainable in the World to build them.

The fact is that during 1917-18 the U.S. Aircraft Production Board felled all timber which was suitable for aircraft and was with transportable range of rail or river. Some of it was used for making aircraft which never got as far as the War and the rest of it has been used for frame-houses or firewood. And so there is none left.

Possibly if one could get at the timber in the middle of the great forests in America, including Canada, the wood exists. But there is no earthly way of getting it out and getting it cut up and shipped in sufficient quantities to European or even to American manufacturing centres in time for the initial stages of a great war.

First of all the timber would have to be discovered, then railways would have to be laid for hundreds of miles over trackless country into the forests themselves to get the timber away from where it grows. That process together with the later process of handling would take years. And during those years the design and construction of all-metal or almost-all-metal aircraft would have progressed so rapidly under stress of war necessity that we should not want the timber when we got it.

Consequently it seems that the perfectly obvious thing for our Air Ministry and for the American Air Services to do is to start right now on the assumption that we are not going to use wooden aircraft in the next war. If once that idea is accepted as an axiom then we can get along with the design and construction of metal aircraft.

(To be continued.)

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AN EARLY AIRSHIP FLIGHT.

BY A. J. CORBETT.

[In view of the contemporaneous Airship Revival the following account of one of the earliest cross-country flights in Great Britain is of interest. Actually speaking, the first cross-country flight in England by an all-British airship was made in 1910, when Mr. E. T. Willows flew the "City of Cardiff" (no relation to the "Instone Air Liner" of that name) from Cardiff to Lee (near Catford). The trip which is recounted here must have been one of the first trips made in really bad weather.]

Tuesday, May 4th, 1915. 3.30 a.m. "Come on, Yank, turn out, Ship's going out." I most surely thought that I was dreaming. What a morning! Just a grey dawn, and the wind whistling and rattling the doors and windows of the cabins in which we were housed at Kingsnorth, Kent. I felt sure it was a joke. Then, again, the caller was not the man to get up at 3 a.m., even for the best joke in the world. So I rubbed my eyes, and dressed, and felt quite confident I should be able to keep the appointment I had with a friend in Chatham that afternoon. I thought it impossible that anyone should order the sailing of our old, but consistently-on-the-job, No. 4 in such a breeze. Her best speed was not 40 miles per hour, and this wind was quite that rate. She had done very well for six months, and weathered several strong blows, but it seemed stretching the limit on this journey of journeys by air, for we were going to Barrow, right across England, a longer flight than had been attempted in England before. None of us but felt sure we should do the trip all right, but we should have liked better weather conditions. Anyway, we scrambled some food together, gave a few very uncertain farewells, and got the ship ready to leave.

The crew consisted of eight men, Lieuts. Dalgleish and Scott, Coxswain Luck, Wheelmen Madge and Robinson, Wireless Operator Nicholson, and Engineers Shaw and myself. The working crew had been together quite a while, and had had some exciting experiences, the previous flight having resulted in the death of Stanbrooke, he remaining on the trail rope after we broke away and falling some 500 feet.

The Start.

By 4.15 we had our engines going and were out on the common, just to leeward of the sheds, and the wind had dropped slightly, but was very gusty. After waiting a little while for wireless apparatus, we were let free at 4.30, and as we went away and were beginning to feel the influence of the propellers, I looked back and saw over the sheds the sun just rising, an ugly red smudge on the horizon, and I thought of the old saying anent a red morning.

I knew everything was all right while we were in the air, but I feared the landing, having in mind our last one. Anyway, by the time our engines were in stride we were over Chatham, and, rolling and bumping along at the rate of knots, passed Gravesend and Dartford on our starboard, and in 15 or 20 minutes I saw the towers of the Crystal Palace, 6 or 7 miles away on our port side. I say port and starboard, but at times the wind was so strong that we were nearly turned around. In a few minutes there loomed ahead of us the Tower Bridge and St. Paul's Cathedral, and looking over the side I recognised the West India and Surrey Commercial Docks, full of ships, and the first sign of life and movement. The men had probably been working all night. We flashed by the golden cross of St. Paul's and could literally have throw a biscuit onto it, and looking over the side I recognised Kingsway, the Opera House, and then Shaftesbury Avenue, and I thought of the jolly times I had passed in this neighbourhood. For this is the strangers' quarter, and here one meets the world travellers, all nationalities, especially French, and they are in a way my people.

London, Nelson, and the King.

One thinks strange things in strange circumstances, and my imagination was quite busy. It seems all my life I have been pushed into or fallen across strange adventures, Canada, U.S.A., France, Norway, the North, South America, and other places, but to be rolling and pitching over London, of all places in the world, in an airship at 5 a.m. appealed to me as being quite funny. We made for Trafalgar Square and passed old Nelson's Monument, and again I thought, should his great spirit have taken refuge in his statue on this windy morning, what amazement would have been his. For here was a ship of war, for we were armed, bigger than his famous "Victory," floating past higher than his topmast, a huge though quite noisy bubble, and with one of our scientific Christian bombs could have done in a second more damage than one of his old solid-shot broadsides. But before I have finished thinking of Nelson we are circling, or trying to circle, over the British Admiralty, the heart of the great Fleets that have decided so much in this war. It is 5.0 now and I had proof positive of what so many travellers say, that London is the only great capital that really goes to sleep, and as it appeared to me it was thoroughly asleep this morning. Apart from a few policemen, no one was moving.

We roared away from Trafalgar Square, and in a few minutes were flying quite low over Buckingham Palace. The Royal Standard was flying, and by this I knew the King was there. We passed over the south wing of the Palace, and of course my head was busy again, thinking what the Kaiser and his followers would offer to pay us to drop a good bomb at this moment. Whether the King or any of the Royal Family saw us I do not know, but we all looked down "just to have a peep," and that is the way a person thinks as he goes along.

We jogged along over Hyde Park, even the soldiers not up, and seeing the Alexandra Palace off to starboard, passed directly over Hendon Aerodrome. There was the wreck of a biplane, whether anyone had been hurt we could not tell. About this time we were busy with the engines, but looking over the side occasionally I could see we were passing over most beautiful country. We had flown over the whole of the county of Kent, and I had always thought it very pretty, but this country was just glorious. Bucks, I believe, was the county. About this time we picked up the L. & N.W. Railway, and this gave us our direction. We also picked up a good slant of wind and we were travelling very fast, at about 750 feet. We were going so fast, and rolling to such a degree that, though I had a good telescope, I could make out no station names until we came to Wolverton, which we passed at 6.45.

Thoughts in the Air.

Between Hendon and Wolverhampton we passed, going to London, two fast L. & N.W. Railway sleeper trains, and the thought came to me what an awful yet grand spectacle to see a train wreck from an airship. For instance, a head or tail collision. From our height we could see for 20 miles the railway track, all curves eliminated. A train full of sleeping passengers, roaring along at 60 or 70 miles per hour. Between it and a slow freight train on the same track, a curve, a great collision the inevitable result, and we should be powerless to do anything but look on. I watched poor Stanbrooke from the time he left the ground on our trail-rope, until, no more than four minutes later, he was a lifeless mass of broken bones, after his 500-feet fall. I saw his every movement, the letting go of one hand after the other, his arms stretched out, his body turning over and over. One gets such a clear, concise view of everything from the air. I do not care about seeing anything more like it, at least in cold blood. Also, about this time, we passed another fast express going North, passed it easily, so our speed must have been great. I noticed a strange thing as we went over this train. The engineer gave us a couple of whistles, and I was so surprised at the clearness of the sound that I thought it was our own engine-room telegraph. Above the roar of our engines the sound was clear and sharp, and I had cotton wool in my ears.

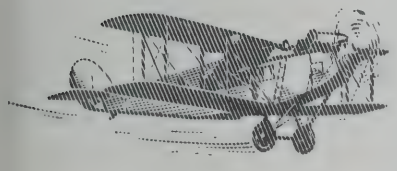
Coventry.

We roared along until, halfway between Wolverton and Lichfield, we lost our good wind, I believe on account of a cross range of hills butting into our course. I made out no towns until we reached Lichfield at 8.30. The wind at this time was starboard quarter, so for a long time we "crabbed" it, sideways, that is. We were well over the Black Country by now. It was about 8.0 when we passed Coventry on our port side, about 10 miles away. I quickly recognised the great Daimler motor works, and also the Church, and remembered a certain time, Coronation year, when I stayed at the King's Head and made the acquaintance, through a policeman, of the strange laws and customs of this quaint old town. I have laughed many times since.

The Midlands.

Birmingham we passed shortly after, a great smoky blot, about 15 miles off on the same side. It rained a little at this time and the air was misty, so we stuck closer to the railway. As I have said, we made Lichfield at 8.30 and I figured we were about halfway to the end of our journey. We had taken four hours to do this first half, though at varying speeds, of anything between 5 m.p.h. and 75 m.p.h. and sometimes even going backward, so I gave us another four hours to get "home." So we swung away from Lichfield, picking up a fast slant of wind, and the great railway town of Crewe rose up in front, was under us and well in the rear in quick order. We passed directly over the L. & N.W. shops at about 500 feet, the yards full of curious workpeople, thousands of them. Some thinking us a Zeppelin and cursing us accordingly, but not one knowing who we were, where from or to where bound. Some there were with imagination, who worked out what terrible havoc we could effect, and how entirely at our mercy they all were, and there *may* have been one who knew, as we did, how thoroughly helpless we were. We could neither have stopped nor turned backward in our course, for the wind was much

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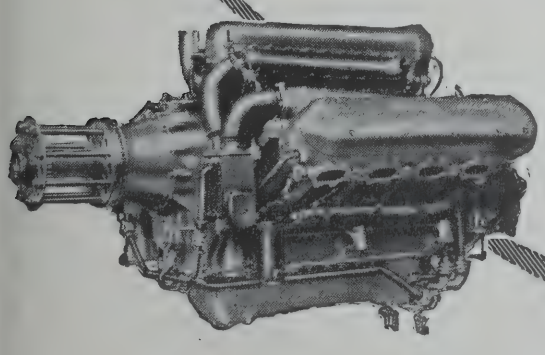
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stronger than our propellers at that time. I believe we went faster over Crewe than any other town on our voyage. Anyway, it is safe to say that there were many arguments among the Crewese that day, and much anxious looking for the *Evening News*, but their curiosity was not satisfied that way, for this "raid" was not published, and so we passed by a mystery, and I suppose we remain a mystery.

How beautifully our motors were running! Always good, it seemed to-day they were possessed of something approaching the human, as though they realised that something out of the ordinary was being attempted, and their synchronising rhythm seemed to repeat " it's all right, we'll do it easily." Tin cans, and all manner of names they had been called, but they "delivered the goods." Two hundred good hours and more had this pair done, and were good for 200 more. So we swept along, until shortly after leaving Crewe we raised a big sheet of water, about 20 miles to port, and also a great transporter bridge. I was genuinely surprised at the speed we had travelled, for I knew it to be the Mersey we were approaching, and the bridge could be mistaken for nothing in the Kingdom but the Runcorn Transporter.

I did not know at the time what speed we had made from Lichfield, but I have since worked it out and find we did 65 miles in little over one hour. Now I know the geography of the coast from Warrington to Barrow, and in my mind drew a straight line, and it passed through Blackpool, and I gauged the distance at 60 miles or thereabouts, and was correct, so, with the country fairly flat and our good wind holding, I added one hour to the time of our passing Warrington, and reckoned that that would be the time of our arrival at Barrow. It was 9.20 when we sighted the bridge, and 9.40 when we arrived over the Ship Canal at Warrington, so I assured myself that by 10.30 we should have seen the Tower at Blackpool, and had the smoke of Barrow well in view. At this time we had some work to do with the engines, so pointing North I gave Shaw the signal that we should be "Home" in about an hour, and he nodded agreement. After working for about 15 minutes on the engines, I looked over the side and found we were going due East, up the Ship Canal, at right angles to the course I thought we should go. It is 15 miles from where we turned to Manchester, but it took 45 minutes to make, and we turned North again, passing directly over a great military hospital.

The Lancashire Coast.

We now arrived over bumpy country, in fact the journey from Manchester to Lancaster (10.30 to 11.45) was quite a cork-in-the-sea affair. Sideways, backwards, up and down, we bumped and dived and rolled, and at Lancaster we made straight over a great factory with four tall chimneys, on the edge of the water, and we then headed for Grange. For a while we were travelling over water and sand, and the smooth going was duly appreciated.

We arrived over Grange at 12.10 and then raised the lighthouse tower of Ulverston. I had never been to Barrow before, so knew nothing of this structure, and wondered why a light so large should be required in Morecambe Bay, which I knew to be very shallow. Still speculating on this point I noticed we were driving straight for the Tower, so I looked forward to a closer view and perhaps an explanation. We were probably 400 feet up when we passed it and I read the inscription, and saw it was a memorial to one Furness. By the time I had made this out we were pulling away again towards the village of Ulverston, and on arriving at the edge of the town we encountered a great downgust of wind which bore us nearly onto the chimneys. I afterwards learned that we were the cause of several faintings on the part of women, while others made for their cellars, in fact we caused quite a stir.

In five minutes or so I could make out a great American crane, a long way off in the mist, and that was our first view of Barrow. We soon made out the Town Hall Tower, and what I thought was the air shed, but which was really Cavendish Dock, the birthplace and tomb of the famous "Mayfly." However, I soon discovered that this particular shed was not to be our nest, as another came into view, right on the sea beach it seemed to me.

The First Attempt to Land.

We passed near the famous old Furness Abbey, and made for the Hematite Steel Works, and prepared for landing. Nearing the shed we soon had evidence of the strength of the wind, inasmuch as it required a tremendous circle for us to make the landing pulley. A second circle we had to make, and came down and dropped our trail-rope to a good landing. How the wind was blowing! but we had arrived and were glad. The great journey seemed ended. It was now about 12.30. There were plenty of men and soldiers, so I figured everything would be all right, provided we encountered no gusts. The guys were well manned, Lieutenant Dalgleish and Cox descended to the ground to dock ship, the trail-rope was rove and stoppered, but matters must not be hurried too much. We were being walked slowly to the shed and were about halfway there, when came a gust of wind. Bang went the forward port guy, the men falling all over one another. The stopper on the trail-rope went bang! too, and "Let go all!" was the order roared out. Very good! Every one had let go, and away we went like a puff of smoke, the trail-rope roaring through the block. That rope was as deadly as a live shell, and woe betide anyone catching a good hold on it.

The Safety of the Landing Party.

I believe I state a general fact when I say that in a case like the present the people in an airship are more concerned with the people on the ground than with their own safety. The thought of personal danger never occurs until the affair is over. There is a great deal of truth in the idea that an aviator falling to his death in an aeroplane does not realise it so long as he can be working his levers or doing something to try to avert the disaster. I witnessed at Denver, Colo., the death of the famous Wright flier, Hoxsey. From the moment he commenced his fall of nearly 2,000 feet until he reached the earth, he was endeavouring, by standing as upright as possible between his planes, to regain his equilibrium. Had he realised what was waiting, I believe he would have lost his nerve and fallen away from his machine.

Another Attempt.

However, I gave a quick look and was glad to see that no one appeared to be hurt. There were now in the ship just five people. Lieut. Scott, Madge, Robinson, Shaw, and myself. We were going out to sea fast, but there was not the slightest undue excitement. Shaw said to me, "We'll start the engines." I replied, "Mine first, it is the easier engine to start." Right! The starboard engine is started and the propeller going, and we slow up. The port engine is started with the impetus of its propeller, and we slowly forge ahead. Very slowly, but still we were gaining. It took us half an hour to get back, but we got there, and made a second perfect landing. Trail-rope all correct and guys manned. This time two trail-ropes were rove, and in the open there was no great pull on the ship.

We were again walking to the shed, and half-way between the two blocks, when it became necessary to add to the port trail-rope. This was done and we proceeded to the shed, some of the later added rope being clear of the block. We were now very near the doors and felt comparatively secure when came another gust, and bang! The port trail-rope was gone, and "Let go all!" was again the order. The starboard rope stopper snapped like cotton and away we went again. This time the car of the ship had been manned, and we went away carrying five men, clinging on the sides. The hand-holds were easy, but our first care was to get these men inside, which was done, and the ship was ballasted to equalise. We got the engines started up again as soon as possible, but we were a good distance over the sea, though not so far as the first time. I had seen two men knocked over, one falling a few feet and the other by the trail rope passing between his legs, the writhing end throwing him cleanly on his back.

The Landing.

We got under way again, and were going slowly ahead when Madge looked back and told us he was going to drive right into the shed. It seemed a bit desperate, but was apparently our only chance, so we took it. Engines doing their best, we passed over the edge of the beach, where the land rose up to about 30 feet in a mound. We were within 200 feet of the shed, and doing well, when the trail ropes caught in some obstacle on the beach. We were only a few feet from the ground, and the ropes straightening out from the top of the 30-foot mound to the mooring point of the ship, came into contact with my propeller. Crash! The whole ship shook, and the pieces from my propeller flew in all directions, but the port propeller was all right, and we were now in the lee of the shed, and quite safe this time. Many were the shouts of, "Rip her!" "Hang on to her!" But the guys were manned, also the side of the ship, we were pulled slowly in, and the big journey was over.

Mr. Cobham at Glasgow.

Mr. Alan J. Cobham paid a visit to Glasgow on Apr. 2 and 3. On the evening of Apr. 2 he gave a lecture on the flight to India and back, under the auspices of the Scottish Section of the Royal Aeronautical Society, which drew an audience of over 400, before which he was entertained at dinner by the committee of the Society.

At midday on Apr. 3 he addressed a meeting of 400 cadets from the Glasgow schools, and was afterwards the guest of Lord Weir at lunch and on a visit to the Weir housing works.



THE BRITANNIA TROPHY FOR THE MOST MERITORIOUS PERFORMANCE OF THE YEAR HAS BEEN AWARDED TO WING-COMDR. GOBLE FOR HIS FLIGHT IN A FAIREY IIID SEAPLANE COMPLETELY ROUND THE COAST OF AUSTRALIA ...

FAIREY AIRCRAFT

THE ROYAL AIR FORCE.

The London Gazette.

Mar. 31.

Air Commodore A. M. Longmore, C.B., D.S.O., is appointed Director of Equipment, Air Ministry (Apr. 1) (vice Air Commodore D. Le G. Pitcher, C.M.G., C.B.E., D.S.O.).

General Duties Branch.—Flt. Lt. L. J. Riordan, A.F.C., takes rank and precedence as if his appointment as Flt. Lt. bore date Jan. 1, his name appearing on the gradation list immediately below that of Flt. Lt. A. P. Davidson (reduction to take effect from Mar. 23).

Stores Branch.—Flg. Off. F. Battey-Pratt is placed on the retired list (Apr. 1).

Reserve of Air Force Officers.—The following are confirmed in rank:—Flg. Offs.—J. A. Shaw (Mar. 1); O. M. Baldwin, D.F.C. (Mar. 7); J. C. Cantrill (Mar. 11). Plt. Offs.—L. D. Hamblin (Mar. 18); E. P. Clacey (Mar. 23); J. W. Bowler (Mar. 23). The following Flg. Offs. are transferred from Class C to Class A (Mar. 31):—J. E. A. Hoare, L. S. Punnett. Plt. Off. G. O. Wood is transferred from Class A to Class C (Mar. 31).

Apr. 7.

The date of appointment of Group Capt. L. W. B. Rees, V.C., O.B.E., M.C., A.F.C., as Air Aide-de-Camp to His Majesty the King is Feb. 6, and not as stated in *Gazette* of Mar. 20.

General Duties Branch.—The following Cadets are granted perm. comns. as Plt. Offs. on successfully passing out of the R.A.F. Cadet College, Cranwell:—H. E. Nowell (Mar. 9); F. S. O'Hanlon (Mar. 12); N. C. Walker (Mar. 17).

The following Plt. Offs. are promoted to the rank of Fly. Off.:—P. Jones (Feb. 15); E. R. Newbigging (Feb. 23); A. H. D. Livock (Mar. 13). The promotion of Flg. Off. J. C. Hill to that rank is antedated to June 10, 1924.

The following Plt. Offs. on probation are confirmed in rank:—E. C. G. Badcock, L. Dalton-Morris, J. A. C. Florence, J. S. Georgeson, E. B. C. Groner, G. D. Harvey, R. G. M. Mill, J. J. Nolan, W. F. Rimmer, C. W. Switzer, J. W. Van der Beeck, A. J. Walker, G. A. Whitehead (Mar. 15); E. H. Newman (Mar. 18). The seniority of Plt. Off. J. J. Nolan in that rank is antedated to Mar. 15, 1923.

The following are transferred to the Reserve:—Class A: Flg. Offs.—H. A. C. Atkinson, D. M. N. Coles, R. G. R. Godby, H. E. Greenberry, J. V. Roberts (Mar. 29). Class C: Sq. Ldr.—R. C. Lane (Apr. 1).

Plt. Off. C. H. P. Morgan relinquishes his S.S. comn. on account of ill-health (Apr. 1); Flg. Off. A. R. Farrow (Lt., R.A.) relinquishes his comn. on return to Army duty (Mar. 23).

Medical Branch.—D. B. Smith, M.B., is granted a S.S. comn. as Flg. Off. for three years on the active list, with effect from and with seniority of, Mar. 19.

Reserve of Air Force Officers.—The following are granted comns. in Class A, General Duties Branch, as Plt. Offs. on probation (Mar. 31):—R. A. Jacquot, A. J. Stubbings.

The following are confirmed in rank:—Flg. Offs.—S. J. Clinch, D.C.M. (Mar. 30); W. Allan (Apr. 7). Plt. Offs.—C. G. Gass, M.C. (Mar. 30); E. H. Rossington (Mar. 30); F. G. Sinclair (Apr. 7).

Flg. Off. C. J. Clark is transferred from Class A to Class C (Apr. 7); Flg. Off. H. Forrest is transferred from Class B to Class C (Apr. 7). The comn. of Plt. Off. on probation V. H. E. Baker is terminated on cessation of duty (Feb. 3) (substituted for the notification in the *Gazette* of Feb. 3).

Appointments.

General Duties Branch.—Group Captain W. F. MacNeece, C.B.E., D.S.O., D.F.C., to H.Q., Air Defences of Great Britain, 27/4, for Air Staff duties.

Wing Commander J. T. Babington, D.S.C., to No. 7 Group H.Q., Andover, for Technical Staff duties, 6/4.

Squadron Leaders N. H. Bottomley, A.F.C., to Air Ministry, 1/5. R. M. Drummond, D.S.O., O.B.E., M.C., to R.A.F. Depot, 1/5. C. H. Keith, to Armament and Gunnery School, Eastchurch, 14/4. F. G. D. Hards, D.S.C., D.F.C., to Air Ministry, 20/4. C. E. H. Medhurst, O.B.E., M.C., to R.A.F. Staff College, Andover, 20/4.

Flight Lieutenants E. H. Richardson, to R.A.F. Base, Leuchars, 14/4. C. N. Ellen, D.F.C., to No. 7 Group H.Q., Andover, 17/4. W. J. Umpleby, to No. 5 F.T.S., Sealand, 8/4. J. P. Coleman, A.F.C., to H.Q., Coastal Area, instead of to R.A.F. Depot as previously notified, 14/4. M. D. Nares, A.F.C., to R.A.F. Base, Leuchars, 6/4. J. McFarlane, M.C., to R.A.F. Depot (Non-effective Pool), 4/4.

Flying Officers J. T. Hall, to R.A.F. Base, Leuchars, 6/4. H. A. Dinnage, to R.A.F. Base, Gosport, 15/4. E. R. Hockaday, to No. 1 Stores Depot, Kidbrooke, 21/4. J. W. Mitchell, to Air Ministry, 21/4. C. W. S. Chambers, to No. 24 Sqdn., Kenley, 20/4.

Medical Branch.—Squadron Leader P. M. Keane, D.P.H., to H.Q., Coastal Area, 22/4. Squadron Leader (Dental) D. Blair, to H.Q., Inland Area, 8/4. Flight Lieutenants T. J. Thomas, M.B., to R.A.F. Hospital, Cranwell, 21/4. T. M. Walker, to No. 1 School of T.T. (Boys), Halton, 21/4.

Stores Branch.—Flying Officer E. I. T. Duffield, to Air Ministry 7/4.

Flying Accidents.

The Air Ministry announced on Apr. 8 that as a result of an accident during fog, a Vickers Virginia, of No. 9 Squadron, Manston, landed in the sea off Birchington, at 11.00 a.m., on Apr. 7, 1925, Plt. Off. Eric Alfred Claude Bushell, the pilot of the aircraft, was slightly injured, and No. 362113 AC.2. Horace Eustace Grellis, was seriously injured.

Plt. Off. Neil Coull Walker and No. 335778 AC.1. Ernest Edward Mills, the remaining occupants of the machine, were reported missing, and it is feared that they have been drowned.

The Air Ministry announced on Apr. 9 that as a result of an accident at Leysdown, near Eastchurch, to a Bristol Fighter, of Armament and Gunnery School, Eastchurch, at 11.20 a.m., on Apr. 8, 1925, Plt. Off. Anthony Cecil Carbery Mason, the pilot of the aircraft, was killed.

The Health of the Service.

[*Report of the Health of the Royal Air Force for the year 1923. Published by command of the Air Council. 3s. 6d. net. Air Publication 1103 of 1925.*]

In submitting his report to the Air Council, the Director of R.A.F. Medical Services, Air Commodore D. Munro, C.B., states that in comparison with previous years the health of the Force in 1923 shows progressive improvement. The percentage of injuries due to flying accidents has remained almost constant coincident with a progressive increase in the amount of flying carried out. The standards of physical efficiency of officers have been satisfactorily maintained.

Air Commodore Munro makes special mention of an account in chapter IV of the Report of the Aerial Transport of sick in Iraq, including the evacuation, in April, 1923, by air, of 200 sick amongst the British troops in Northern Kurdistan. These operations, including the air ambulance work, were fully described in The Aeroplane of April 23, 1924. In addition to this a total of 161 patients was evacuated by air from outlying stations to the R.A.F. Hospital, Baghdad, during the year May, 1923, to July, 1924.

Evidence of the excellent precautionary work of the R.A.F. Medical Services is recorded by the fact that in August of the year under review, a severe outbreak of cholera occurred amongst the native population in Persia, and spread throughout Iraq. Owing to stringent precautions no cases occurred amongst R.A.F. *personnel*. An epidemic of plague occurred at Basrah but no cases were recorded in the R.A.F.

The question of a suitable ration for crews of aeroplanes undertaking long-distance flights, especially over desert country, has been investigated, and experiments are being carried out.

The average standard of physical fitness required of R.A.F. recruits is being maintained. 5,405 men who wished to enlist were accepted and 4,935 were rejected during the year. The chief causes of rejection were,—inadequate teeth 17 per cent., poor physique 13 per cent., and diseases of the heart 10 per cent. One refrains from making the obvious remarks.

The complete life-cycle of the *phlebotomus* was again worked out at Finchley, but the descendants of the untamed phlebotomi, having been hatched in such respectable surroundings, politely refrained from infecting with sandfly fever the gallant volunteeers on whose anatomy they fed.

There were 46 deaths caused by injuries whilst flying on duty, and 56 deaths resulting from other accidents on duty. The 21 deaths caused off duty include seven due to athletics, bathing being considered athletics and accounting for four of them. One man was bitten by a jackal.

The analysis of sickness at home and abroad, excluding 48-hours' cases, works out at ratios per 1,000 of strength as 354.3 at home, and 727.4 abroad, which is considerably lower than either 1921 or 1922.—C. M. MC. A.

The Rhymes of Rufus Ruderbar.

The Wart-Hog.

I was not ever thus. When first I came
From out my maker's works so fair was I
That oft my skin did blush for very shame
To hear the comments of the passers by,
Who praised my form, my comeliness of line,
My speed, my handiness and my design.

Till I, forgetful of the saw which goes
That pride before a fall doth run, grew proud
To think that I might meet my country's foes
And bear my head ensanguined but unbowed.
But more the pride the greater is the fall;
I, once so fair, am now despised of all.

For one did come who said that I should bear
A gun wherewith the better I might fight,
A compass, eke, to steer me through the air,
Electric bulbs to mark my path by night
And apparatus, too, with which I could
My fellow aircraft speak to, if I would.

All these excrescences upon me stowed
Have spoiled my speed and comeliness I vow,
My virgin body, scarred to take the load,
Resembles naught but loathsome wart-hog now
And, crowning insult, 'tis not long since my
Designer passed me with averted eye.

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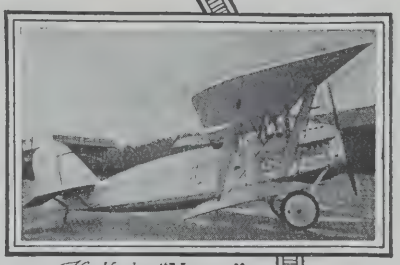


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AIRSCREWS AND GEARS.

The aeroplane is a vehicle driven by an engine which can develop only a definite maximum power at a certain rate of revolution. The aeroplane itself however has a very wide speed range. Starting from rest on the ground, it has to pass from standstill to the getting-off speed. Once in the air it is required to climb and it is desirable that it should be able to climb at a steep gradient to a very considerable height. And when it has reached its normal cruising height it is desired that it shall be able to fly level at the greatest speed that is possible with the engine power available, or at any intermediate speed with the engine throttled.

The thrust which is required to keep an aeroplane in steady horizontal flight at any given speed is equal to the resistance of the aeroplane at that speed. The resistance of an aeroplane varies very considerably with change in flying speed. If it is required to fly at any given gradient at a certain speed the thrust required is equal to the resistance in steady flight plus the total weight of the aeroplane multiplied by the slope of the gradient. That is to say a gradient of 1 in 10 calls for a thrust of one-tenth of the weight, one of 1 in 5 for one of one-fifth of the weight, over and above the thrust required for level flight at the same speed.

The thrust which it is possible to obtain from an engine of given output depends on the power of the engine, and the speed of motion of the vehicle which that engine is driving. One horse power is 550 ft. lbs. of work done per second. If the engine is propelling a vehicle at 60 m.p.h. = 88 ft. per sec. the maximum thrust which it can exert is $\frac{550}{88} = 6\frac{1}{4}$ lbs. per h.p. If the speed is doubled—to 120 m.p.h.—the maximum possible thrust is halved, and becomes $3\frac{1}{8}$ lbs. per h.p. If the speed is halved and becomes 30 m.p.h., then twice as great a thrust is possible, that is $12\frac{1}{2}$ lbs. per h.p. This supposes an overall transmission efficiency of 100 per cent. If the transmission gear has an efficiency less than this the thrust obtained is less in proportion.

If therefore one is set the task of producing an aeroplane with an engine of given h.p. and of a specified top speed, it is simple at once to assess the maximum possible resistance of the machine at that speed. If the speed is, say, 120 m.p.h., then, with 100 per cent. airscrew efficiency, the resistance at 120 m.p.h. must not exceed $3\frac{1}{8}$ lbs. per h.p. of the engine. Actually, as no airscrew in practice exceeds about 80 per cent. efficiency, one would take 80 per cent.—or to be on the safer side, perhaps, 70 per cent.—of this figure, and would conclude that the resistance of the machine must not exceed between 2.2 and 2.5 lbs. per h.p. If the engine in question were of 450 h.p., then the resistance of the complete machine at 120 m.p.h. must not be more than from 990 to 1,125 lbs., otherwise the engine and airscrew combination cannot possibly provide the thrust necessary for that speed.

Having designed the machine to meet these requirements one is certain that the desired top speed can be reached. But what will be the performance of the machine in other respects? What will be its maximum climbing rate, at what speed will that maximum climb occur, and how will the machine behave in regard to getting-off? These questions can only be answered when the resistance of the machine at all speeds is known, and also when the characteristics of the engine and airscrew combined are also known, throughout the speed range. The rate at which the machine will accelerate on the ground, and the angle at which it can climb in the air, depend on the amount by which the thrust that can be given by the power plant exceeds the air resistance of the machine.

If the airscrew were an apparatus which gave a constant efficiency, under all conditions, and if the power required to drive it at a given number of revolutions per minute were constant, then the thrust available would vary in inverse proportion to the air speed of the machine, and at 60 m.p.h. the thrust for full engine power would be twice as great as at 120 m.p.h. The airscrew could then be regarded as an infinitely variable gear of constant efficiency. The airscrew, in fact, is an infinitely variable gear, but it is, unfortunately, not of constant efficiency.

The blade of an airscrew is essentially an aerofoil which is travelling in a spiral path, compounded of its movement of rotation round the engine shaft and of the forward motion of the aeroplane. If the screw is rotating at N revolutions per second and the aeroplane is moving forward at V feet per second, the forward motion per revolution is $\frac{V}{N}$ feet. This is known as the advance per revolution, and will be called A. The rotaional speed is πDN. The ratio of rotational speed to forward speed therefore is $\frac{\pi DN}{V}$ which is $\frac{\pi DN}{NA}$ or $\frac{\pi D}{A}$.

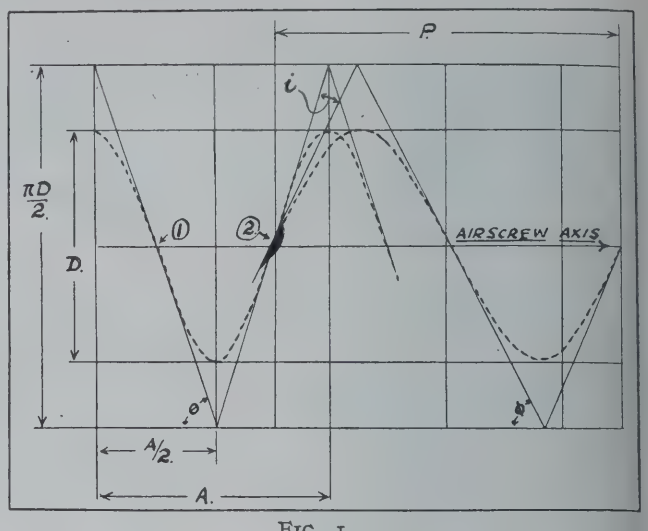


Fig. 1.

In Fig. 1 the dotted curve shows a plan view of the path of the tip of an airscrew of diameter D, which is making an advance A per revolution. The angle of the spiral path to the airscrew axis is that of the tangent to the dotted spiral at (1), and is equal to θ. Normally the blade section of the airscrew moving in this spiral path has a positive angle of incidence, as shown at (2). It will be seen that the face of the blade may be regarded as lying on another spiral shown in dashed lines, and the pitch P of this spiral is known as the face pitch of the blade. The angle of incidence of the blade itself therefore is determined by the relation between the face pitch P and the advance per revolution A. If these are equal the angle of incidence is zero, if P is greater than A, the incidence is positive, and if P is less than A, the incidence is negative.

The face of an airscrew blade over its effective working surface is very nearly a true helix, and therefore if the incidence at the tip is zero, positive, or negative, at any given advance per revolution, it will also be zero, positive, or negative, at any other radius. So that the ratio between advance per revolution and face pitch at the tip, may be taken as characteristic of any particular airscrew. Also, if airscrews of different sizes have the same ratio of advance to diameter and of pitch to diameter, the angles of both the advance spiral and the pitch spiral will be the same, and the angles of incidence of corresponding blade sections will also be the same.

As the advance $A = \frac{V}{N}$ the ratio of advance to diameter is V/ND, and the ratio of pitch to diameter is P/D. The whole behaviour of any airscrew depends to a very great extent upon these two ratios and on the relations which hold between them. That this must obviously be the case is apparent when the forces on an airscrew blade are considered. In Fig. 2, a section of an airscrew blade is shown moving forward along ab, and rotating in the plane of cd, so that its real path is in the direction ef. The blade has an angle of

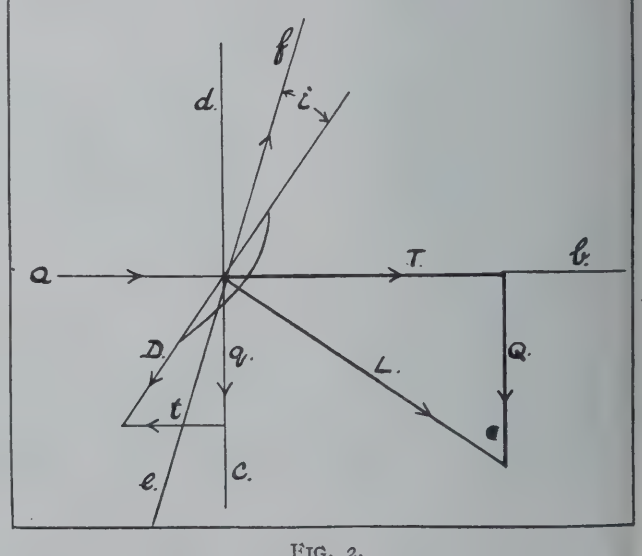


Fig. 2.

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WORLD'S RECORDS

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Class C bis (seaplanes):—Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h.

Carrying 250 kgs. of useful load:—Distance covered without landing, 1,102 kms. Speed over 100 kms., **159·151** km.p.h. Speed over 200 kms., **158·834** km.p.h. Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h." *The Aeroplane*

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incidence *i*, and being a normal aerofoil is subject to the lift force *L* at right angles to its path line *ef* and to a drag force *D* in line with *ef*.

The lift force *L* may be resolved into a thrust force *T* along *ab*, the line of motion, and to a torque force *Q*. The relation between these two forces depends only on the angle of the spiral path of the blade, that is to say, upon the relation between the advance per revolution and the diameter at this particular section. If no other force than lift were encountered by the blade the efficiency would be 100 per cent. and the ratio between thrust and torque would be settled entirely by the ratio between the speed of rotation and the speed of advance.

This ratio is in fact a gear ratio, and *V/ND* is a measure of the gear of the airscrew and therefore sets a definite limit to the thrust-torque ratio which can be obtained.

Unfortunately, the airscrew blade is subject to drag as well as lift. The drag *D* may also be resolved into components of thrust and torque, as at *t* and *q*. The torque component of drag, *q*, must be added to the torque component of lift to give the total torque, which is $Q+q$, but the thrust component of drag, *t*, is in the opposite direction to *T*, the thrust due to lift, so that the net thrust available is $T-t$. Thus, although the thrust force is by no means the same as the lift force on the blade section, and drag forces by no means account for the whole of the torque, the efficiency of the airscrew blade does depend on the ratio of lift to drag, and a high efficiency cannot be obtained unless the blade as a whole gives a high *L/D* ratio.

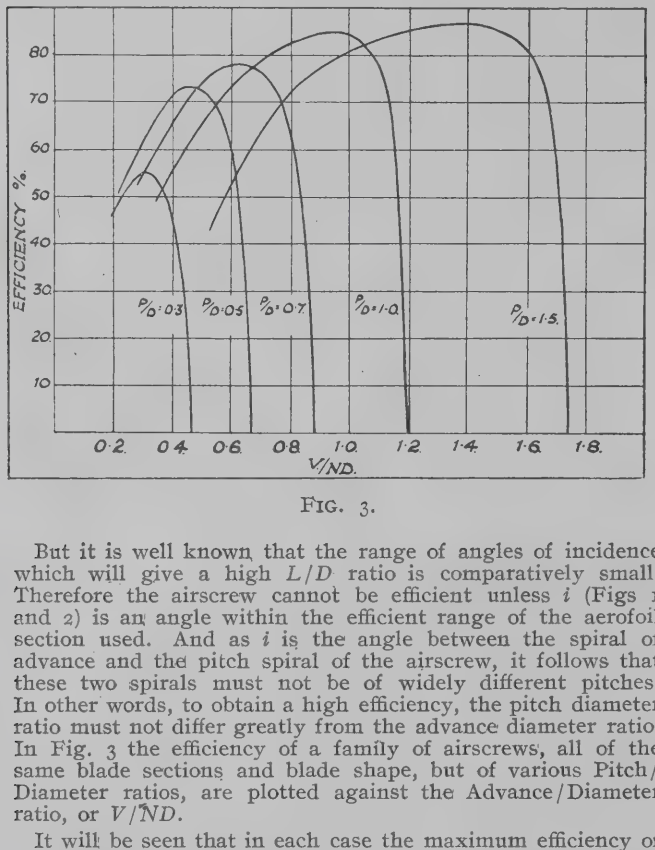


Fig. 3.

But it is well known that the range of angles of incidence which will give a high *L/D* ratio is comparatively small. Therefore the airscrew cannot be efficient unless *i* (Figs 1 and 2) is an angle within the efficient range of the aerofoil section used. And as *i* is the angle between the spiral of advance and the pitch spiral of the airscrew, it follows that these two spirals must not be of widely different pitches. In other words, to obtain a high efficiency, the pitch diameter ratio must not differ greatly from the advance diameter ratio. In Fig. 3 the efficiency of a family of airscrews, all of the same blade sections and blade shape, but of various Pitch/Diameter ratios, are plotted against the Advance/Diameter ratio, or *V/ND*.

It will be seen that in each case the maximum efficiency of any one screw occurs at a value of *V/ND* nearly equal to the *P/D* ratio. Also that the maximum efficiency attained is greater the higher the value of *P/D*. The increase in maximum efficiency between $P/D=1.0$ and $P/D=1.5$, is not very great, and no further increase of any importance will be attained by exceeding this latter value of *P/D*, in fact the maximum efficiency will fall again if the *P/D* ratio is unduly increased.

Obviously it would be an advantage to be able to use the maximum possible airscrew efficiency at all forward speeds of the aeroplane. But in practice this is impossible. For instance, Fig. 3 indicates that a maximum efficiency of 88 per cent. can be obtained with an airscrew with a pitch diameter ratio of 1.5, running at an advance of 1.4 diameters per revolution. If one attempts to realise these conditions in practice difficulties are apt to arise.

Suppose, for example, one attempts to fit an airscrew of these characteristics to the 120 m.p.h., 450 h.p. machine, previously considered. Assume that the engine is geared to give 1,200 r.p.m. of the airscrew at full power. 120 m.p.h. is 10,560 ft. per minute, and therefore the diameter which must be used to obtain the required value of *V/ND* is $\frac{10560}{1200\times 1.4}=6.3$ ft. approximately. But when the other characteristics of this particular form of airscrew are investigated it will be found that the power absorbed by a screw of this blade shape, and pitch ratio of 6.3 ft. diameter at 1,200 r.p.m., is about 30 h.p. and not 450 h.p. The power absorbed can be increased by increasing the blade area—at some loss in efficiency—but it cannot be increased 15 times. Therefore, a screw of larger diameter, giving a lower value of *V/ND* and a lower maximum efficiency, must be used—unless the gear ratio of the engine itself can be changed.

If the airscrew diameter is increased in the ratio of 1 to $\sqrt{15}$ and the speed of rotation is reduced in the same ratio, the power absorbed will increase 15 times and the value of *V/ND* will remain constant. The engine gearing would therefore have to be changed to give $1{,}200\div\sqrt{15}=323$ r.p.m. and the diameter of the airscrew would have to be increased to $6.3\times\sqrt{15}=24.2$ ft.

An airscrew of such size would be impossible on account of its weight and of the ground clearance required, and the consequent weight and resistance of the undercarriage. In practice, therefore, one must usually sacrifice something in efficiency of the airscrew. In this particular case, assuming the engine gear could not be changed, an airscrew of about 12 ft. diameter, with a pitch/diameter ratio of about 1.0, would be a reasonable compromise. The value of *V/ND* at 1,200 r.p.m and 120 m.p.h. would be about .734, and from Fig. 3 it will be seen that an efficiency of about 80 per cent. could be obtained under these conditions.

But this efficiency would only be obtained at 120 m.p.h. If the engine maintained constant revolutions at all air speeds it is clear that the advance per revolution—or *V/ND*—would decrease in proportion to the speed of the aeroplane. But the torque required to drive the screw at constant r.p.m. increases as *V/ND* decreases, which means that more power is required to maintain the r.p.m. at low air speeds than at high. As a result the engine speed falls off as the speed drops, but not in anything like proportion to the air speed. *V/ND* therefore falls with the speed, and at the same time both the engine power available and the efficiency of the airscrew are reduced, with the result that at low air speeds only a greatly reduced proportion of the maximum engine h.p. is available as thrust.

To illustrate how important this fact is from the practical point of view, the case of the supposed 450 h.p., 120 m.p.h. machine will be considered in fuller detail. This machine would have a gross weight of about 6,000 lbs., and would stall at 60 m.p.h. The full line of Fig. 4 shows the h.p. required for level flight between 60 and 120 m.p.h. The horizontal dashline marked 338 h.p. represents the h.p. which would be available if constant engine power and 75 per cent. airscrew efficiency could be maintained at all speeds. At the speed of minimum power (75 m.p.h. in this case) 150 h.p. would be required for level flight, so that there would be 188 h.p. available for climbing. This would give 1,042 ft. per minute climb, and a ceiling of about 16,000 ft.

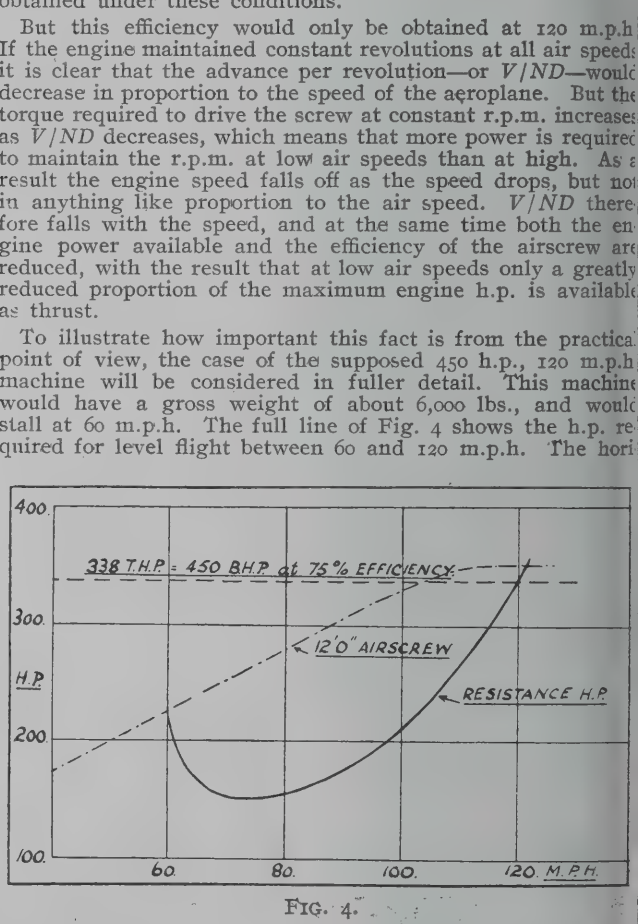


Fig. 4.

The actual h.p. available from the supposed airscrew is indicated by the dot-and-dash curve. This gives rather more than 120 m.p.h. top speed, as the efficiency at that speed exceeds 75 per cent. But at 75 m.p.h., the available h.p. is only 270, or 120 h.p. for climb, giving a climb of only 660 ft. per min, and a ceiling of about 11,000 ft.

Instead of giving a large reserve of power for acceleration at the stalling speed of 60 m.p.h., the airscrew only just meets the machine-power curve at this point.

(To be continued.)



The D.H. type 50 commercial aeroplane (230 h.p. Siddeley Puma Engine) has a comfortably appointed cabin for four passengers, or as a freighter can carry 1,150 lbs. of goods.

EXTRACT FROM A LETTER FROM AIR VICE-MARSHAL SIR SEFTON BRANCKER, K.C.B., A.F.C.

Written on the conclusion of his 17,000 miles flight from London to Rangoon and back in a D.H.50, to Capt. Geoffrey de Havilland, O.B.E., A.F.C., F.R.Ae.S., dated 18th March, 1925.

"The D.H.50 proved to be an extraordinarily comfortable conveyance for such a long distance journey. During the whole trip I was never too hot nor too cold, in spite of the great variations in temperature which we encountered. The cabin is remarkably silent, and at the end of more than nine hours' flying during a day, I felt just as fresh as I did starting in the morning.

"The design, both of the aircraft and the engine, proved to be eminently suited to the enterprise, and I was very much struck with the small amount of maintenance that was required on the aeroplane, in spite of the fact that it stood in the open in very varying climatic conditions at nearly all our stopping places. When we were forced to land in a snowstorm in Germany the machine was dismantled, transported by road 50 miles, and re-erected by unskilled personnel in 36 hours under conditions of considerable difficulty; the machine was in perfect flying order at the end of this episode, and I think this forms a remarkable testimonial to the soundness and simplicity of the design."

Full specification of the D.H.50 and other de Havilland types will be sent post free upon request.

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The Australian Light Aeroplane Competitions, 1925.

The New South Wales section of the Australian Aero Club has just issued the regulations for a light aeroplane contest to be held during the week Nov. 28—Dec. 5, 1925. These regulations are interesting, particularly for the attempt to deal with the engine rating problem. The competition is open to any heavier than air machine whose engine does not exceed 40 h.p. when computed according to the formula :—

$$P = 10 \left(\frac{C}{1,000} \times \frac{R}{1,000} \right)$$

Where P is the h.p., C the piston displacement in c.c. and R the maximum r.p.m. on the ground with the airscrew used for the contest. Put more simply, h.p. is taken to be equal to capacity in c.c. multiplied by r.p.m. divided by 100,000. This means that an engine of any capacity may be used, but that the larger the capacity the lower must the r.p.m. be. For instance, a 1,000 c.c. engine turning at 4,000 r.p.m. a 2,000 c.c. engine at 2,000 r.p.m. or a 4,000 c.c. engine turning at 1,000 r.p.m. would be admissible. The only serious difficulty likely to be encountered is the absence of suitable engines—for after their experiences of 1924 likely Australian competitors will not be tempted by 1,000 c.c. engines run up to over 3,000 r.p.m., and there are very few 2,000 c.c. and over air-cooled engines available, while the water-cooled car engines of about this size are all far too heavy to be serviceable. As a matter of fact the 3-cylinder 35 h.p. French Anzani, which is of about 3,000 c.c. and which could be run at 1,300/1,400 r.p.m., seems the only engine now in existence which fills the bill.

Machines may be either single or two-seaters and shall carry a load of 170 lbs. per seat. Two-seaters will be awarded a bonus of 15 per cent. on all marks gained provided they actually carry two-seater load throughout the competition.

Points will be awarded as follows :—

250 marks for the machine flying the maximum distance in completed circuits of the course, and all other machines in proportion to the distance covered.

250 marks will be awarded to any machine which completes at least five hours' flying and which does not incur any penalties for mechanical failure or lack of reliability. Rules for penalties are not yet passed.

100 marks will be awarded to the machine covering one circuit of the course in the minimum time. No marks will be given for any machine showing an average of less than 55 m.p.h., and marks will be computed in accordance with the formula marks $= \frac{100 \times (y-55)}{x-55}$ where x is the speed in m.p.h. of the fastest machine and y is the speed of the machine in question.

100 marks will be awarded to the machine covering the longest distance (in complete circuits) on one gallon of fuel. Other machines will be marked pro rata on their mileage per gallon.

100 marks will be awarded for the maximum altitude attained provided it exceeds the equivalent of 5,000 ft. in standard atmosphere. Points will be awarded to other machines in proportion to their altitude in excess of 5,000 ft. relative to the same excess in the case of the maximum altitude.

100 marks will be awarded for the machine which clears a 10 ft. barrier in the shortest distance from being at rest on the ground. Other machines forfeit 1 mark for each yard by which its take-off distance exceeds the minimum.

100 marks will be given to the machine coming to rest in the shortest distance in a straight landing over a 10 ft. barrier. Other machines forfeit 1 mark for each yard excess.

50 points will be awarded at the discretion of the judges for general good flying qualities.

100 marks will be awarded to the machine which flies the greatest distance round the course in one unbroken flight. Other machines will be marked in proportion to distance covered.

The prize list is not yet settled, and the method of allocating prizes is therefore uncertain.

The Institution of Aeronautical Engineers.

On Friday, Apr. 24, Commander C. D. Burney, C.M.G., M.P., R.N. (retired), will give a lecture, illustrated by cinematograph films, on "The Position of the Airship in Aerial Transport."

In view of the present awakened interest in Airships and of Commander Burney's connection with the Airship Guarantee Co. Ltd., which has undertaken the construction of one of the new 5,000,000 cub. ft. airships, this lecture should attract very great interest.

New Technical Literature.

The Royal Aeronautical Society, Journal of: No. 171, Vol. XXIX, March, 1925.—Contents: Notices; 60th Annual Report of the Council; Papers: The Operation of Flying Boats in the Mediterranean, by Air Commodore C. R. Samson; The Reliability of Aircraft Engines, by J. D. Siddeley, C.B.E.; The Reaction of a Stream of Viscous Fluid on a Rotating Cylinder, by A. R. Low (concluded).

Aeronautical Research Committee—*R. & M. No.* 928.—Tests of Four Thick Aerofoils, R.A.F. 30, 31, 32, and 33. By F. B. Bradfield and A. S. Hartshorn. Price 6d. net.

R. & M. No. 938.—A Theory of the Full Scale Determination of Damping in Roll. By S. B. Gates and H. M. Garner. Price 9d. net.

R. & M. No. 939.—On the Effect of Inertia on the Lateral Motion of an Aeroplane under the Influence of Gusts and Control Movements. By L. W. Bryant and D. H. Williams. Price 6d. net.

R. & M. No. 940.—An Analysis of the Pressure Distribution on a Model Airscrew by Means of the Vortex Theory. By A. Fage. Price 6d. net.

The National Physical Laboratory.—Report for the Year 1924 (H.M. Stationery Office). Price 8s. 6d. net.

The Junkers G.23.

The following further information is now to hand concerning the new triple-engined Junkers passenger carrier illustrated in a recent issue of The Aeroplane. It is said that the Inter-Allied Commission of Control has now given permission for this machine to be used in Germany.

No data as to the engines actually fitted are available, but it is said that the central engine may be of from 220 to 450 h.p., and the wing engines from 100 to 160 h.p. It may also be built as a single engine type with one Napier Lion, or it may be built as a twin-engine type with two 220 h.p. engines. These arrangements presumably are to meet the requirements of the Commission of Control.

The cabin is fitted with nine seats for passengers and accommodation for a page-boy to supply refreshments, etc. Side-by-side pilot seats with dual control are fitted. The cabin has hot water circulation from the engine cooling system. The undercarriage can be replaced by either a twin float gear or with ski for snow and ice work.

Specification.

Span ... 29.0 m. (95 ft. 2 in.)	Max. speed 170 km.h. (104 m.p.h.)
Length 16.0 m. (52 ft. 6 in.)	Min. speed 85 km.h (52 m.p.h.)
Height 3.5 m. (11 ft. 5 in.)	Ceiling 4,000 m. (13,120 ft.)



The Fiat C.R. single-seat fighter (300 h.p. Hispano-Suiza).

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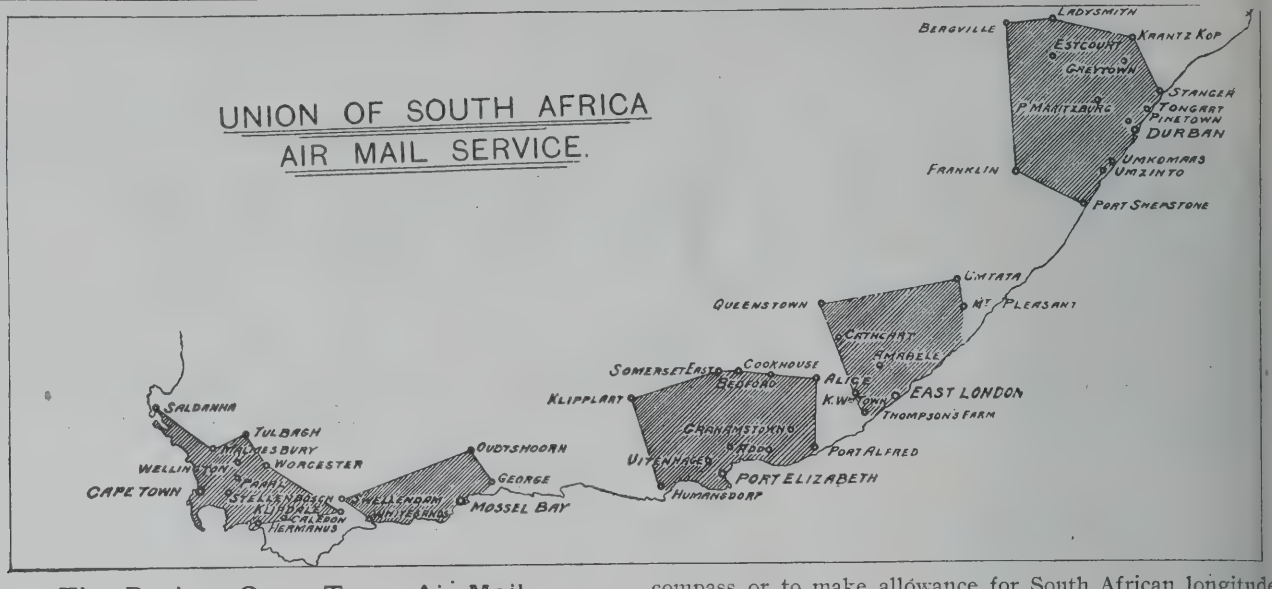
GLOSTER "MARS VI" single-seater Fighter with Jaguar engine. (Also fitted with Jupiter engine.)

WINNERS OF THE AERIAL DERBY, 1921-1922-1923.
HOLDERS OF THE BRITISH SPEED RECORD, 212.2 M.P.H.
RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



The Durban-Cape Town Air Mail.

A brief record of the experimental flights of the Durban-Cape Town Mail Service was given in THE AEROPLANE of Feb. 25. Further details have now been received together with a pamphlet on the Air Mail issued by the Government Stationery Office at Pretoria.

This pamphlet is printed in English and Dutch, each section starting on the outside cover, one being upside down to the other. It is really a short prospectus and states on the cover that by using the Air Mail, business men of Durban, Port Elizabeth, East London and Mossel Bay are placed on an equal footing with those in Cape Town.

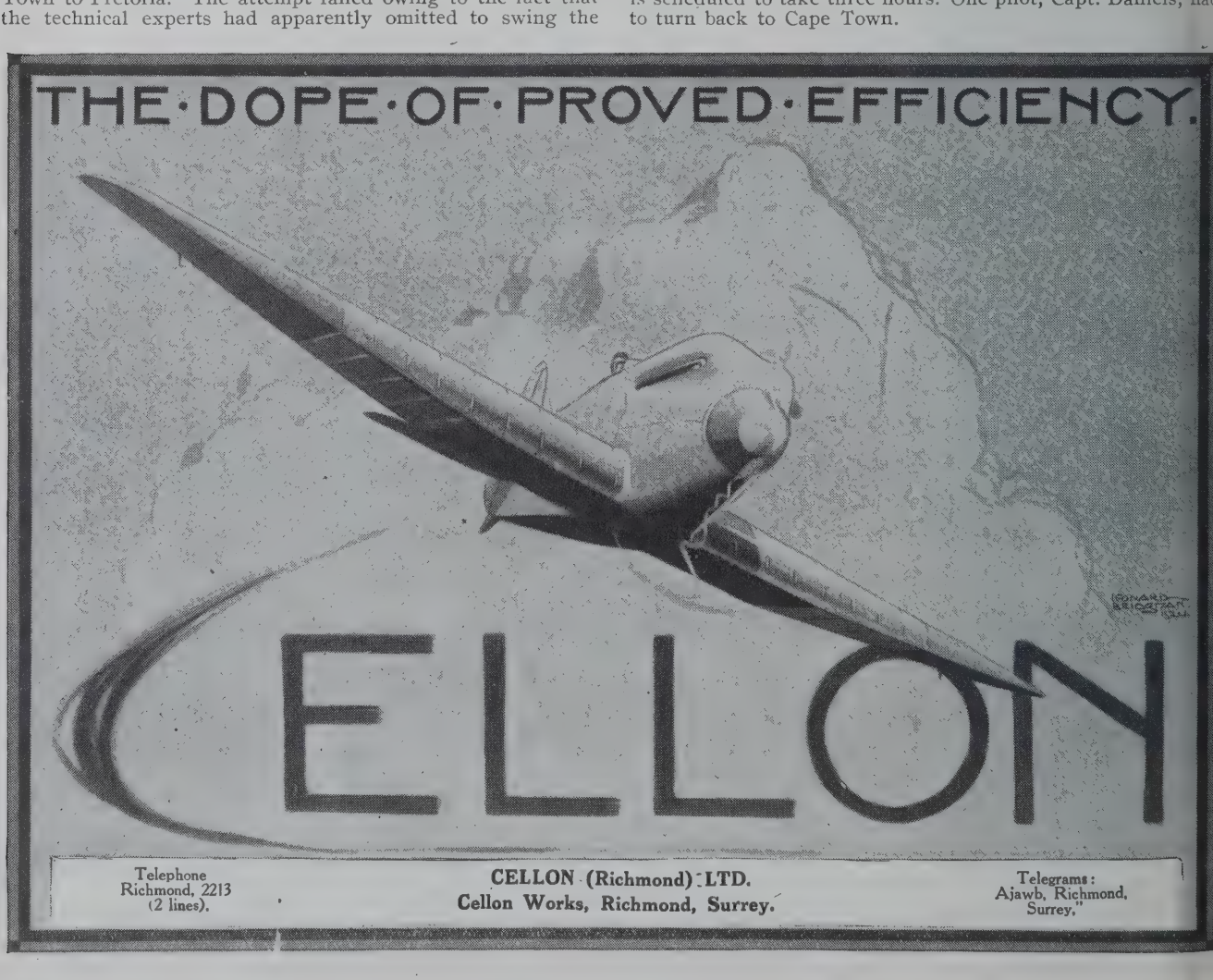
The trials began on Feb. 19 with a flight by 10 machines from Pretoria to Durban. These machines were accompanied by another machine piloted by Major Meintjes, who was in charge of the expedition.

Major Meintjes was a scout pilot in the R.F.C. during the war. Later he was connected with Handley Page (South Africa), Ltd., and took part in an attempt to fly from Cape Town to Pretoria. The attempt failed owing to the fact that the technical experts had apparently omitted to swing the compass or to make allowance for South African longitudes Consequently the machine made a forced landing in the veld many miles off its course, and was somewhat deteriorated.

The eleven machines landed safely at Durban in spite o the very bad aerodrome which is too small and has a surfac of deep, loose sand. Eight machines left Durban at 2.2 on the same day and reached East London. Here two mor machines remained behind according to plan and Majo Meintjes crashed his undercarriage and was forced to retire The remainder left on the morning of the 20th and lande at Port Elizabeth, Mossel Bay, and Cape Town during th same day. Two machines remained at each place.

On Feb. 22 three machines left Durban in a serious attemp to cover the 850 miles of the route in accordance with th time-table. In spite of good conditions they arrived 1½ hour late and it was decided that the mails would have to leav Durban on Thursday afternoons instead of each Friday.

On Feb. 25 the experimental flight from Cape Town bega and owing to fog, rain and a head wind, the mails were 1 hours making the 200 or so miles to Mossel Bay, a trip whic is scheduled to take three hours. One pilot, Capt. Daniels, ha to turn back to Cape Town.



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The weather was still foggy when they left Mossel Bay at 11 a.m. the following day but they reached Port Elizabeth at 1.30. In spite of the adverse conditions, the pilots are said to have displayed efficiency and resource.

Ultimately the authorities decided to adopt the winter time-table, namely to allow 1½ days in each direction, and on Mar. 2 the service was definitely and successfully inaugurated.

An Air Route in the Sudan.

It is reported that negotiations between representatives of the Blackburn Aeroplane and Motor Co. Ltd. and the Governments of Kenya, Uganda, and Anglo-Egyptian Sudan for assistance in a preliminary survey for an air route for sea-planes between Kisuma, on Lake Victoria Nyanza, and Khartoum have been successful. Capt. Gladstone, A.F.C., who has represented the Blackburn Co., has been making a special study of the conditions of the proposed route.

Brussels-Belgian Congo.

On Apr. 3 Lieut. Thieffry, MM. Roger and De Bruycker arrived at Leopoldsville, in the Belgian Congo.

They left Brussels on Feb. 12 on a Handley Page W.8.F. biplane (one Rolls-Royce Eagle IX and two Siddeley Puma engines) in an attempt to fly to the Belgian Congo. After being held up in France owing to bad weather they flew in regular stages from Perpignan via Oran, across the Sahara to Niamey. Here they were again held up owing to the extreme heat, but succeeded in flying the last 700 miles across dense forest to Leopoldsville. The total distance from Brussels to Leopoldsville is about 5,100 miles.

The W.8.F. was built by the S.A.B.C.A. under licence from Handley Page Ltd., and is the first of a batch of this type which will be used on a regular commercial service between Leopoldsville and Elizabethville, a distance of 1,200 miles, a journey which normally takes 45 days by land transport, but will take only 12 hours by air.

The flight from Brussels to the Belgian Congo again demonstrates the reliability of British aero-engines.

The original idea of flying the machine out to the Congo has demonstrated in a very practical manner the suitability of the three-engined Handley Page for long-distance transport.

The S.A.B.C.A., the constructors of the aeroplane, Handley Page Ltd., Rolls-Royce Ltd., the Aircraft Disposal Co. Ltd., the S.A.B.E.N.A. for their choice of aircraft for operating the Service Leopoldsville—Elizabethville, and the crew of the machine, all deserve congratulations.



AD ASTRA.—Mr. Tom Mix, movie star, may now be added to the firmament of aviators. He is here seen in (presumably) Canadian garb with the Curtiss "Jenny" on which he performs.

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COMMERCIAL AERONAUTICS.

Owing to the exigencies of the Easter Exodus the usual table of air line statistics is held over until next week.

Croydon Notes.

There has been a considerable increase in the traffic on the air lines this week, and during the week-end the boom was such that the terrible shortage of machines was most marked. How on earth Imperial Airways are going to manage this summer is very difficult to see. The Avro Commercial was due at the aerodrome over the week-end and should now have arrived, and the repaired Vulcan and another Napier Vulcan should arrive in a few days. The D.H.54 and the triple-Jaguar Handley Page should be rolling up some time, the former fairly soon, and the latter in June. Apart from these the bulk of the traffic will be carried by the D.H.34s, the W.8s, a 50 or two, and the Vimy.

There was a comic and somewhat cheap attempt at publicity on the part of Imperial Airways Ltd. during the week. A W.8b was fitted up with a small cinema projector on Tuesday, and while the machine was being flown round about by Mr. Wilcockson, a film was shown to various press representatives. Personally one would imagine that the average cinema theatre is much more comfortable and far safer. But evidently someone enjoyed it. There always has been a craze to be the first to do something particular in the air, no matter what it is. If one's memory is correct this idea was originated by the late Mr. Gustav Hamel.

Incidentally, the projector was operated by Mr. Lines, who was at one time a pilot in the days of A. T. and T. and is now in the cinema trade.

On Saturday morning most of the traffic was held up until midday by a thick fog. Although it was quite clear at Croydon the Channel and the Continental aerodromes were impregnable. Things cleared a bit at midday and all machines left.

It is very difficult to persuade waiting passengers that there really is a fog in the channel when they are basking in sunshine at Croydon. One was showing someone the inside of the Fokker F.VII on Saturday morning, in which was sitting a lady passenger waiting to depart, who seemed to hold us morally responsible for the delay, so that we were compelled to flee to Mr. Leverton for safety and comfort. Mr. Leverton promised us the required comfort but fled before administering it. One hopes that on reading this he will make amends next week.—G. D.

Mr. George Powell.

His many friends will regret to hear that Mr. George Powell, the well-known cross-Channel pilot met with a very serious accident on Wednesday of last week. He was driving up to town in his little H.E. car in the morning, and when passing over that dangerous bridge on Mitcham Common, another car suddenly came out of a side turning and collided with Mr. Powell's car. The latter was thrown out and his head was severely injured by the lamp bracket.

An immediate operation was performed, which saved his life, and though he is now, and must be for some days, in a a very dangerous condition, he is going on as well as can be expected.

Everyone will most earnestly hope that his progress will be maintained and that in the course of time he will make a complete recovery.

Northern Air Lines Ltd.

Northern Air Lines Ltd., who are operating a service between Stranraer and Belfast, have had another 100 per cent. efficiency week. They have now been running for a month and have not missed a scheduled trip in either direction during that time. The weather on the whole has been bad, fog and rain dominating most days. Therefore this high factor of reliability is all the more creditable to the pilots and the administration.

PERSONAL NOTICES.

FORTHCOMING MARRIAGES.

GLENNY-BOYES.—The marriage will take place on Wednesday, Apr. 29, at St. George's, Hanover Square, of Sq. Ldr. Arthur Willoughby Falls Glenny, M.C., D.F.C., Royal Air Force, only surviving son of Mr. and Mrs. James Swanzy Glenny, of Glenville, Newry, with Avice Noel, only daughter of the late Mr. George Boyes, formerly Chief Magistrate at Cape Town, and Mrs. Boyes, of 39, Cholmley Gardens, West End Green, Hampstead.

NEWALL—FOSTER.—A marriage has been arranged, and will take place shortly, between Air Commodore C. L. N. Newall, C.M.G., C.B.E., A.M., Royal Air Force, only son of the late Lieut.-Col. W. P. Newall, and Olive Tennyson Foster, only daughter of Mrs. Francis Storer Eaton, of Boston, U.S.A.

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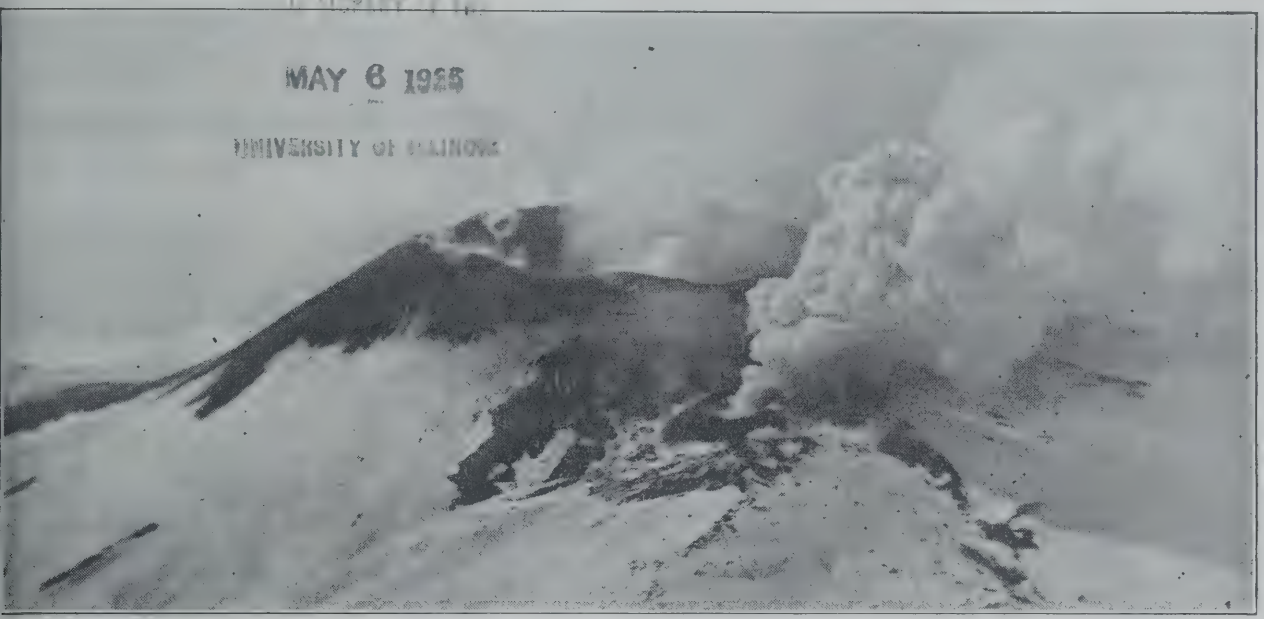
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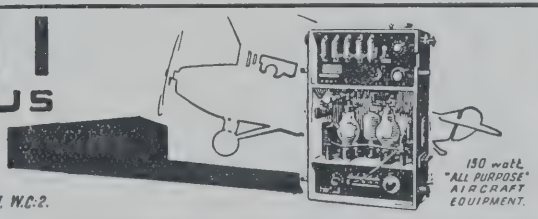
A BLOW HOLE.—An Aerial view of Mount Etna taken from a machine belonging to the *Regia Aeronautica* or Italian Royal Air Force. The photograph has been kindly supplied by the *Intendenza Generale della Regia Aeronautica*.

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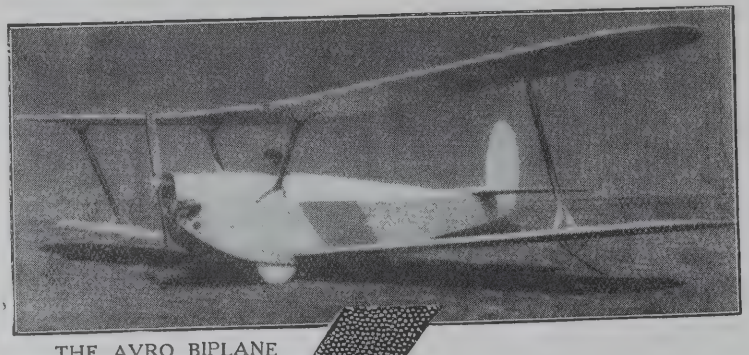
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ON THE SAFETY-FIRST TESTS.

The British Empire really owes a great debt of gratitude Mr. Anthony Fokker, the Dutch aeroplane designer. After interval of ten years he has again taught us an Imperial son, such as that of which Mr. Kipling wrote twenty-five rs ago.

n 1915 fighting monoplanes of Mr. Fokker's design, based re or less on the French Morane type, made such havoc ong the officially-designed B.E. type biplanes produced ler the control of the Royal Aircraft Factory at Farnough, that the Authorities who mis-managed the Royal ing Corps were compelled, in self-defence, to give the tish Aircraft Industry a free hand. The result was that mately we produced better aeroplanes and more of them n the Germans did, and so ultimately won the command the air.

On Wednesday last, Apr. 15, 1925, just about ten years er, the same Mr. Anthony Fokker appeared at Croydon h one of his F.VII type passenger-carrying monoplanes h a Napier Lion engine, and proceeded to show that n without the aid of extraneous gadgets such as Fairey ps and Handley Page Slots it is possible to make a big senger-carrying aeroplane which will not nose-dive when lled. But it is well to remember that the Fokker itself ld be still further improved by the addition of flaps and s.

he advent of Mr. Fokker, possibly assisted by a sugtion made in this paper last week, spurred the Air nistry to produce from the sacred and secret precincts of Royal Aircraft Establishment at Farnborough an ancient o fitted with Handley Page slots on the wing-tips and ie strange kind of aileron working in conjunction with said slots. This machine was also flown at Croydon, Flt. Lt. Bulman, R.A.F., whom one last saw flying the o h.p. Napier Blackburn Cubaroo at Brough. He demonted what can be done in the way of controlling an aeroie laterally after it has reached the point at which ould normally stall and nose-dive and spin.

ll the aeronautical correspondents of all the newspapers e there and a host of press photographers. Everybody tremendously impressed by Mr. Bulman's flying of the o and even those who really know something about aeroie design expressed their belief that the Handley Page s, even when used in that particular way for lateral con- only, are of very considerable value.

he result of the whole demonstration has been a series rticles in the newspapers impressing on the Public that ough flying on existing types of machines is dangerous, as shown by the fatal accident on Christmas Eve at Croydon, possible to build aeroplanes which shall be free from that most prolific cause of accident, namely, nose-diving and loss of control after a stall.

Thus it seems that ten years after he forced us to build decent fighting machines in spite of official hindrances Mr. Anthony Fokker may well be in a similarly indirect way the cause of our acquiring reasonably safe and efficient passenger-carrying machines in spite of the obstinacy or obstructiveness or stupidity of the technical people at the Air Ministry.

As one has often said, the only way to instil life into an Englishman is to frighten him to death. And after Wednesday's performance our Government experts must be feeling somewhat scared about the security of their jobs.

After Many Days.

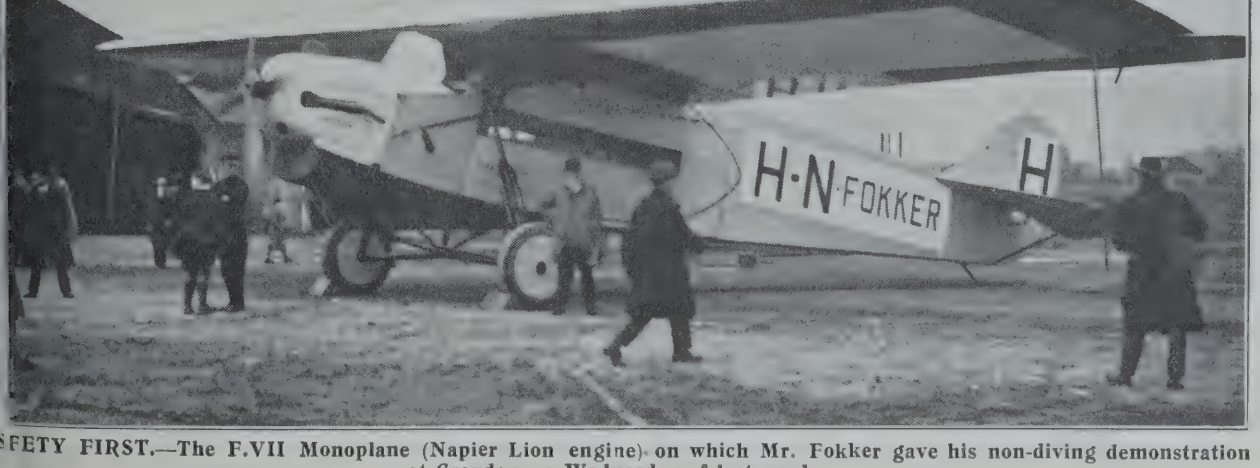
Taking it all round the demonstration was very pretty. Personally one's only quarrel with it is that it ought to have taken place two years ago instead of now. Mr. Fokker knew quite as much about making non-diving aeroplanes then as he does to-day, in fact practically all the Fokker monoplanes which have been running on the K.L.M. line for the past three years have almost the same non-diving characteristics as the F.VII on which the demonstration was made. And, as was pointed out in this paper some weeks ago, the Handley Page Slot theory was made public in THE AEROPLANE in March, 1920. So there is no reason, other than the disastrous mentality of the technical people at the Air Ministry, why that antiquated Avro which was performing on Wednesday last should not have done precisely the same performance three years ago.

Even then the "experts" at Farnborough would have had two years in which to try their minor experiments and fake up a set of Avro wings in the amusingly primitive way in which those have been faked up which were performing last Wednesday. People may quarrel with one for calling aeronautical engineers all the World over "enthusiastic amateurs," but the workmanship and the general arrangement of those Avro wings produced at the Royal Aircraft Establishment at Farnborough certainly gave one the impression that the official engineers at the R.A.E. are amateurs without even being enthusiastic.

The arrangement and workmanship reminded one of Mr. Wardrop, the old Scots engineer in Mr. Kipling's story "The Devil and the Deep Sea" in which, after faking up his shell-wrecked engines with such tools as existed on the ship he remarked "They turrn roond and they dinna touch anything, but ye ken that this is in no sense regular engineering."

What May Be.

In a way of course the R.A.E.'s amateur effort was interesting because, seeing that the machine behaved as it



SAFETY FIRST.—The F.VII Monoplane (Napier Lion engine) on which Mr. Fokker gave his non-diving demonstration at Croydon on Wednesday of last week.

did in the skilled hands of Mr. Bulman, one was able to form some idea of what might be done with a proper engineering job with the whole leading edge properly slotted and fitted with ailerons with their own separate slots all properly operated by gearing designed by a competent engineer. They would come very near realising the imaginary "sky-hooks" which provided so many aerodrome jests in the early days of flying.

One was glad to hear that, presumably as the result of the continued agitation for the proper control of passenger machines since the Christmas Eve accident, the Handley Page Company have at last been given an order for a single set of wings with leading-edge slots and aileron slots and slotted flaps to the trailing edge to fit one of the standard D.H.34s.

Why it should have been necessary to kill eight people before giving such a very simple order is one of those little mysteries which surround Government technical departments. But if the deaths of those eight people have accelerated by a year or so the advent of the reasonably safe passenger-carrying aeroplane then those martyrs to the Conquest of the Air will not have died in vain.

At the same time one cannot help wondering what particular form of Hell awaits the obstructionists whose official delays made such martyrdoms necessary before the obstructions could be removed.

There is however a certain disappointment in hearing that these experimental slotted and flapped wings for the D.H.34 cannot be got ready before the autumn of this year. One has known a completely new type of fighting aeroplane to be built and flown, and even to have its drawings finished, within six weeks from its inception. Therefore one cannot see why a set of wings need take five or six months to build if the people who are paying for them, either the Air Ministry of Imperial Airways Ltd., are prepared to put down the money for overtime work on them.

Still there is some satisfaction in knowing that there is a prospect of having even one standard type passenger machine fitted with these wings in time to prevent a Christmas Eve accident this year.



HANGING UP.—Mr. Bulman on the Avro with Handley Page Slots hanging on her sky-hooks.



THE SKY-HOOKS.—Views from below and above of th Handley Page slots on the ends of the Avro wings.

The Argument of Money.

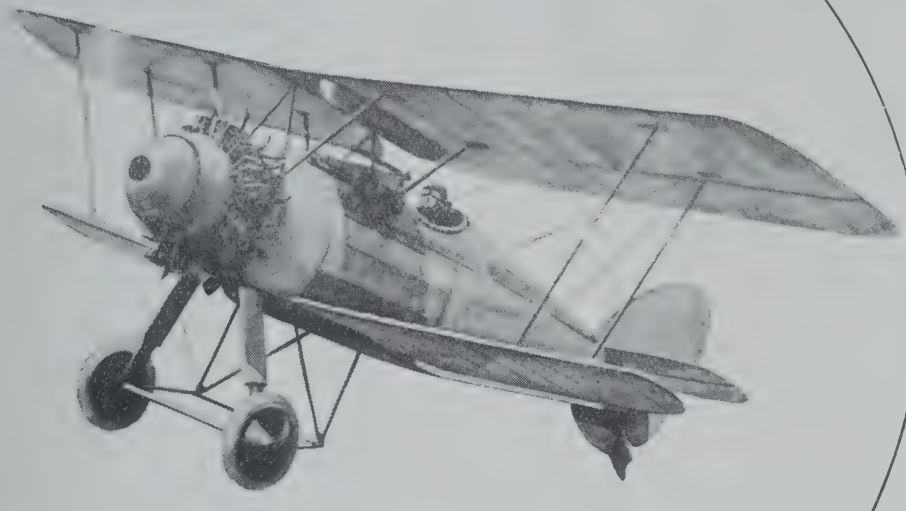
There is interest in the statement made in a newspap after the demonstr tion the group of insurance companies which insure a craft risks have agreed to deduct 33⅓% from the premiu on all aeroplanes fitted with the Handley Page slot contr This statement is not strictly accurate, for the insuran group, which is singularly well served on its technical sid has known all about the Handley Page slots for sever years. But it is true that machines so fitted will be giv the benefit of a reduced premium. And presumably a simil privilege will be extended to pilots and passengers flying such machines.

This may perhaps be an inducement to the supe commercial Directors of Imperial Airways Ltd. to take so interest in machines designed to further the progress aviation and not merely to carry the biggest load at t lowest cost. So far there is no indication that anything otl than a money-making or money-saving proposition will he the progress of Civil Aviation, and this insurance offer d definitely tend to save money.

At the Demonstration.

The actual demonstration itself was a most entertaini affair. Mr. Fokker, who is unique in being not only a fi class aeroplane designer but one of the very finest pilots the World and certainly one of the most acute business m in the World, brought out the F.VII very soon after ele o'clock. She had been flown over the previous day by M Geysendorffer and was flown back by Mr. Piercey.

The machine is in fact practically identical with the simi machines fitted with Rolls-Royce engines which had b flying for some time on the regular Amsterdam-London s vice and on which Mr. van der Hoop flew to Batavia. I this particular F.VII was fitted with a Napier Lion and had an extra 90 h.p. to spare. As against this spare ho power, however, Mr. Fokker told one that this machine h been designed to take a Rolls-Royce Condor of 600 h.p. a that the wing had been located to take the bigger engine that in order to put the centre of gravity right he v carrying about 300 lbs. of ballast inside the cowling und neath the engine. He had petrol for about 3½ hours' fly



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in the tank and he collected eight passengers to put in the cabin besides taking Mr. Stevens of the Royal Aircraft Establishment in the second pilot's seat beside him.

The Avro Exhibit.

While Mr. Fokker was getting ready to start Mr. Bulman on the old experimental Avro taxied out onto the aerodrome, turned round head-to-wind, opened up his engine, ran a few yards and leaped into the air with very much the action of a bouncing ball.

He sat the machine on her tail and proceeded to climb with the fuselage at what looked like an angle of about 45° but was probably about 25°. There was quite a strong wind blowing, with the result that as soon as the machine had lost the forward way which it had acquired while getting off the ground it hung in the air practically without forward motion for something like a minute, then an extra fast gust struck it and it progressed solemnly backwards for a while.

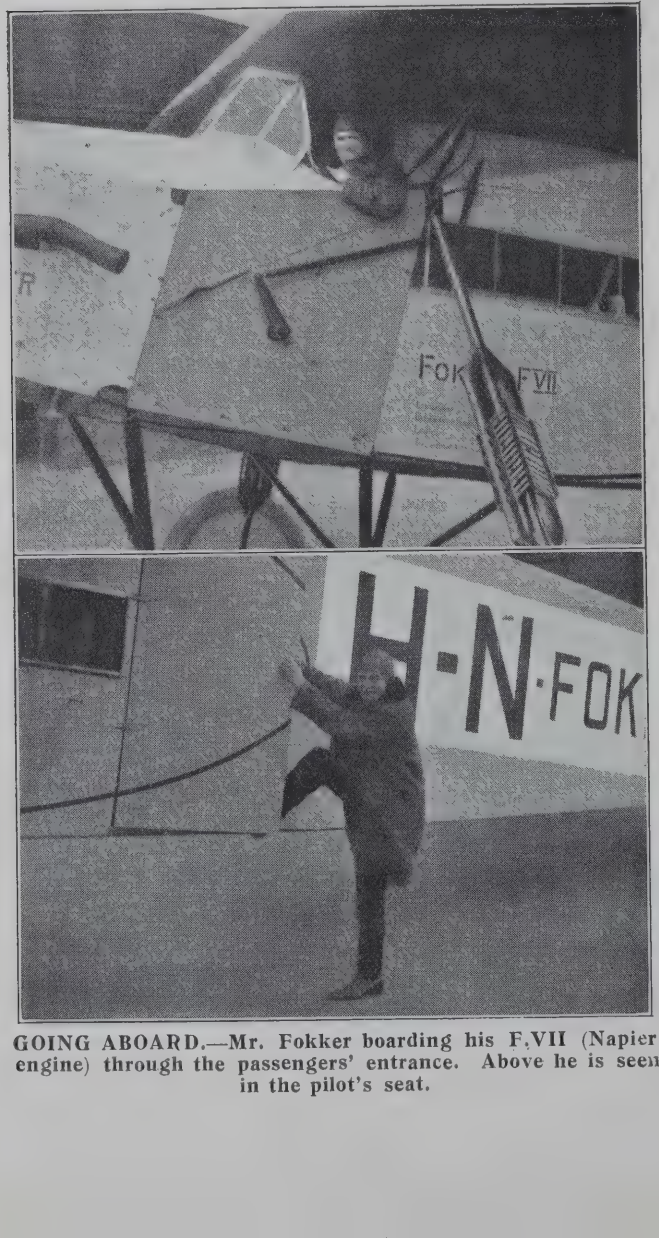
Now, given enough wind, and enough experience of the individual machine and engine, any competent R.A.F. instructor can play that same trick with any Avro, and the aileron slots had nothing whatever to do with the spectacular attitude of the machine. Nevertheless the non-technical spectators were tremendously impressed. One of the more knowledgeable people suggested that " Gravity Defeated " would make a good headline for a newspaper description of the performance.

For the Initiated

Where the aileron slots came in actually was in giving the pilot complete confidence in his ability to play the tricks which he performed afterwards, tricks which were far less impressive to the ordinary spectators but very much more so to those who knew what was happening.

Having hovered, or drifted backwards, for a minute or so Mr. Bulman pulled the machine round with her tail still well down between her legs and did a banked turn which normally would have produced a complete stall and spin, and very probably a crash owing to his small height above the ground.

Also it was noticed that while he was hovering before turning he corrected the machine's inclination to fall over to one side or the other entirely with the ailerons and without using his rudder. On the turn, still with the tail dow one could see that the ailerons were giving all the late control that was necessary and that the rudder was bei used in quite a normal way, instead of being used for late control.



GOING ABOARD.—Mr. Fokker boarding his F.VII (Napier engine) through the passengers' entrance. Above he is seen in the pilot's seat.



ON BOARD.—The cabin of the F.VII, showing the alley-w into the pilot's conservatory.

Having turned, Mr. Bulman took the machine down-wi flying in quite a normal way, and having turned up-wi at the far side of the aerodrome he came back at a somewh greater height, with the engine throttled down considera and proceeded to demonstrate exactly how efficient t aileron controls were.

Thereafter he did various impressive things, such as letti the machine sink with her tail down obviously well bel stalling speed and then picking her up by putting her o a normal gliding angle. Also he made sundry turns dow wind which to those who were accustomed to the ordin Avro looked as if they must inevitably develop into a sp But always the aileron slots kept the machine under perf control even when in apparently impossible positions

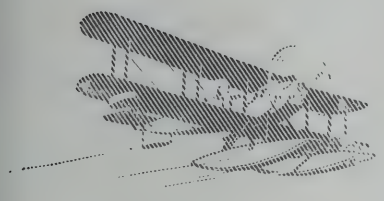
Making Allowances.

One needed a pretty fair working knowledge of flying realise just what Mr. Bulman's performance meant, for had to make all kinds of allowances in one direction or other. In the first place the machine had a rotary engi which prevented him from throttling right down and sh ing what the value of the slotted control would be if engine should stop suddenly.

However, in conversation with Mr. Bulman afterwar one learned that he had at various times landed the mach experimentally with his engine shut right off and found t the slot control was if anything of greater value with a d engine than with a live one—which is not the same thing saying that it is more efficient Incidentally Mr. Bulman marked that the slot ailerons give such extraordinarily cient lateral control that having become accustomed to th he would have to be very careful the next time he flew ordinary Avro without the slot controls.

Also it was necessary to remember that the Avro is v lightly loaded per square foot of surface and is very "corl in the air and consequently, with or without slots, hand very much more easily than does a heavy passenger machi Nevertheless, making every allowance for the qualities the machine itself, it was quite evident to all who und stood what they were watching that the slotted ailerons make an enormous difference.

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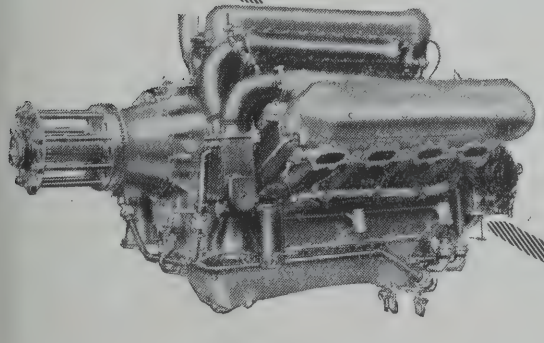
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The Stalled Turn.

One experienced pilot argued that if one were doing a very sharp turn on a machine with slotted ailerons, so that the machine was practically on a vertical bank, and the engine stopped and the machine stalled owing to the sharpness of the turn, it would obviously throw its nose down sideways and dive until it had got up enough speed to be brought under control again.

That of course is perfectly true. No slots or flaps would prevent such a thing from happening. But the point is that with slots all along the leading edge and with slotted flaps no passenger machine ever ought to get into such a position that a sharp banked turn is necessary.

These stalled sharp turns always happen in one of two ways. Either the pilot turns in a frantic endeavour to get back to his aerodrome, as the unfortunate Mr. Stewart did on Christmas eve, or else he tries to do a sharp turn to get into what looks like a likely landing ground owing to engine failure when flying across country. But when a machine has full-length slots and flaps it can be made to glide so slowly under perfect lateral control that the pilot ought to be able to make his landing ground on a straight glide and drop the machine into it at a standstill without having to turn at all. And when he is getting out of his aerodrome he should be able to do such a steep climb and such a flat turn while climbing that he should always be able to get to a safe height above his aerodrome before going outside the aerodrome boundaries.

That is to say, slots and flaps not only make a stalled turn safe but they should in the hands of an intelligent but not necessarily skilful pilot make a dangerous turn at any time unnecessary.

The important thing about the slotted aileron is that with an ordinary aileron, if a machine is climbing steeply and slowly, pulling down the aileron puts a drag on the lower wing and causes a spin, whereas the slotted aileron definitely lifts the lower wing without putting any extra drag on it. This fact was beautifully demonstrated later in the day by a Farman Goliath, as will be described later.

Mr. Fokker's Show.

After Mr. Bulman had landed Mr. Fokker took out the F.VII with his nine passengers, rushed along the ground fairly fast and then lifted her into the air at an agle which was very nearly as steep as that of Mr. Bulman's Avro. He, like Mr. Bulman, met a gust which held the machine almost stationary for some seconds, which also impressed the non-technical spectators. Thereafter he flew round for some considerable time showing the excellent aileron control of the machine at low speeds.

After a while he went down-wind and came back towards the aerodrome at a height of something between 1,500 and 2,000 feet, with his engine throttled right down, and proceeded to show that when he pulled up the nose of the machine to stalling point she merely sank for a while and then brought her nose down to a normal gliding angle instead of dropping her nose and diving.

To the non-technical spectator the performance was not as emotioning as Mr. Bulman's, but to the technical it was at least as convincing in that it showed how a fully-loaded passenger machine can be made by sheer aerodynamic design to do precisely what one has been preaching in this paper for years that it ought to do.

Nevertheless there is still the possibility of proving that the Fokker machine as it is to-day could be made still more controllable by adding slots and flaps to the existing type of wing. There might be some difficulty about fitting a slotted leading edge to that enormously deep cantilever wing but one believes that the experiment would be well worth trying. And in any case slotted ailerons could certainly be fitted.

Incidentally it struck one as peculiar that the Air Ministry should allow a number of perfectly good British spectators, some of them holding official positions, to go up as ballast during these experiments. Presumably as Mr. Fokker was performing for the public benefit and was not carrying passengers for hire or reward he is under no obligation to hold a passenger-carrying licence from the Department of Civil Aviation and as he was not flying outside a three-mile radius from the aerodrome presumably there was no need for the machine to hold a British Airworthiness Certificate. At any rate the rush of volunteers for seats in the machine demonstrated fairly conclusively the confidence which those who are most closely associated with aviation have in the design of the Fokker machine and in Mr. Fokker's skill as a pilot.

After his first demonstration Mr. Fokker delivered a short discourse in one of the sheds and explained that he was only there to demonstrate that a passenger machine could be made which would not nose-dive when stalled and that it was not his intention to do any stunt flying of any kind.

When he had finished his discourse Mr. Bulman went up and gave a further demonstration of the Avro. And after him Mr. Fokker again took up the F.VII; this time with Sir Sefton Brancker in the second pilot's seat. Both these demonstations were very similar to the earlier efforts and were quite pretty to watch.

During the morning a couple of twin-engined Handley Pages belonging to Imperial Airways Ltd. went off on their lawful occasions, both evidently flying strongly, and a D.H.34 also took off, getting a good lift against a strong wind.

The Goliath's Gambols.

When Mr. Fokker had finished his second demonstration a French pilot took up a Farman Goliath and proceeded to show what a clever aviator can do with a lightly-loaded machine which is designed solely to fly and makes no pretentions to inherent stability or anything else.

He took off with as short a run as Mr. Bulman's Avro and he hovered in the air over one spot in very much the same way. Then he put the machine onto something like a horizontal path and fetched her round on a steeply-banked and very sharp hairpin turn.

It was noticeable that in order to make his turn so sharp he did it by pulling down to its full extent the aileron on the lower or inner wing. The drag thus created pulled the machine round with a jerk very much as one pulls oneself round the turn of a staircase by hanging on to the inner banister rail.

This is precisely what the slotted aileron is designed to avoid, and it is a trick which has to be acquired because it is not the natural thing to do. Doing the same thing with a slotted aileron would merely lift the inner wing and throw the machine off its bank and so would cause a flat turn in which the machine would sideslip outwards. The whole point of the slot-control is that it works according to the instinct of the pilot, who is thus free from having to learn unnatural tricks.

Incidentally, writing of sideslips, in discussing the slotted aileron with Mr. Bulman he described the effect of the slotted aileron rather neatly. He said that the difference between a machine with the slots and without so far as controllability was concerned, was rather like the difference between driving on greasy tramlines in a motor-car with four-wheel brakes and non-skid tyres as against a car with back-wheel brakes only and smooth tyres.

Certainly, the Goliath made a brave show and, as one onlooking pilot remarked, demonstrated that there was a lot of lateral control about on that day. But it was an exhibition of pure skill in piloting an extremely controllable machine. In fact to the initiated it rather emphasised the very lesson that this paper had been endeavouring to drive home for so many years, the lesson which was put so neatly by Mr. Alan Cobham when he said that to-day "we depend too much on the skill and pluck of the pilots instead of depending on the skill of the engineers and the reliability of the pilots."

The Lessons.

The one great lesson to be learned from the whole demonstration is that given competent engineering design it is possible to produce a passenger aeroplane, or air-liner as the non-technical press are so fond of calling it, which needs precious little more skill in handling than does a motor 'bus. In other words, one can say about a pilot's job in the future much what Sir Samuel Hoare said in another sense about the R.A.F.'s job in Iraq, namely, that it is an example of "control without occupation."

Which of course is what The Aeroplane has been preaching until its regular readers must be a little tired of hearing the same sermon over and over again. Therefore one takes this opportunity of tendering one's very hearty thanks to our friendly former enemy, Mr. Anthony Fokker, for having given so much of his time and having lent his reputation to proving that one's own sermons on this text contain the truth, the whole truth, and nothing but the truth.—C. G.

A Propaganda Tour.

The Earl of Kinnoull, who recently learned to fly at the De Havilland Flying School, is organising a joy-ride tour in England this summer in order to spread the gospel of aviation. He has placed the actual flying arrangements in the hands of Mr. Gib Ellis, the well-known pilot, and Mr. G. W. Peck is running the business side. Lord Kinnoull has bought one Avro and may acquire another.

After paying expenses the profits will go to benefit the local hospitals.

Passengers will be carried at the usual fees and there will be exhibition flying.

Lord Kinnoull is organising this tour as a proof of his own belief in the safety and comfort of air travel in the hopes that it will help to stimulate interest throughout Great Britain in aviation and in the Royal Air Force.

The tour will open at Whitstable to-morrow (Thursday).



A Silhouette of the FAIREY "FAWN" AEROPLANE.

This machine, which is being supplied in quantities to the British Royal Air Force, has been designed so that it can be employed either as a Day Bomber or for Army Reconnaissance Duties.

In common with all FAIREY AIRCRAFT the "Fawn" is fitted with a patent gear by means of which it is possible to increase the lift of the wings in flight so that the machine is still fully controllable during taking off or alighting even when its speed is below the normal stalling point.

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R.33 SEES IT THROUGH.



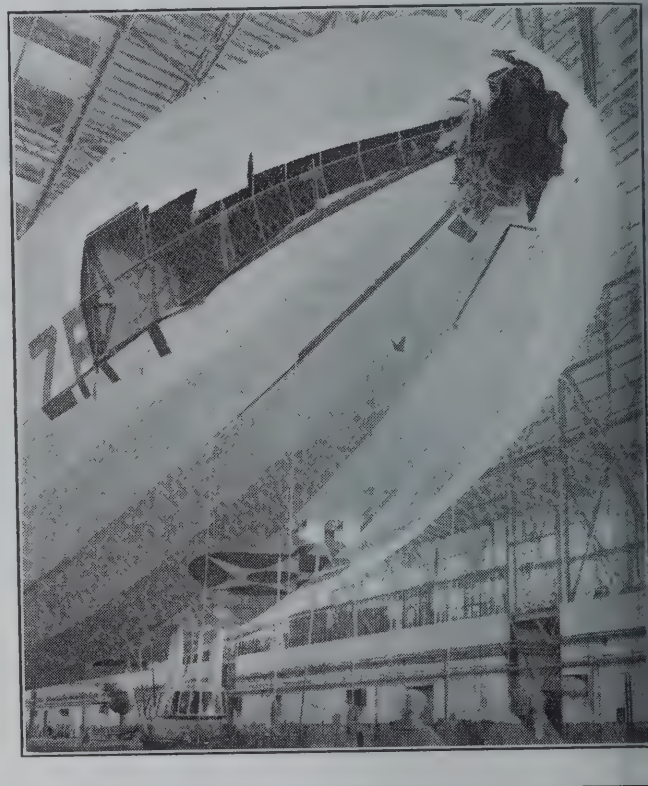
"I AM SO DEEPLY SMITTEN THRO' THE HELM."—The R.33 arriving at Pulham after its adventures. Note the artillery wheels, used for steadying purposes when the ship is moored, still hanging on until the bitter end.

After riding out the gale during the night of Apr. 15 at the mooring mast at Pulham, R.33 broke away at 9.40 a.m. on Apr. 17, in a wind of something over 50 m.p.h. Fortunately, the ship at the time was fully gassed, fuelled and provisioned in readiness for a flight which was to have started on the previous day, but which had been postponed as the weather conditions were unsuitable for experimental work, and in addition, she had on board a crew of 20, with Flt. Lt. R. S. Booth, the ship's first officer, in command.

The ship was rapidly got under control, and reported to that effect by wireless within about one-quarter of an hour of leaving the mast. It being obviously impossible for her to make headway against the gale, R.33 passed out to sea, reached Holland during the afternoon, and, the wind dropping appreciably, began to make slow headway homewards late that evening, with the hope of reaching Pulham by dawn on the 17th. Unfortunately the weather failed to improve as had been hoped, a head wind of 30 knots being encountered, and progress was made only at seven to nine knots, so that at 8 a.m. the ship was still well over the North Sea and about 90 miles from Pulham, where an emergency handling party had been assembled to land the ship on arrival. However, Pulham was reached a little before 2 p.m., and the ship was landed and berthed in her shed in a very short time.

R.33 was in constant wireless touch with Pulham and Croydon during the trip, and to a very large extent the staff at Pulham was able to relieve Flt. Lt. Booth of meteorological troubles and to advise him as to courses to be held to evade the worst of the weather. The Fishery patrol cruiser, *Godetia,* stood by during her journey over the sea, and the Dutch Government arranged large landing parties at the Dutch military aerodromes at de Kooy, Waalhaven, and Soesterberg, in case of emergency. Holland was of course an ideal country for the airship to select as it is a country of born landing parties. Fortunately no call had to be made for external assistance.

The cause of the breakaway was failure of some part of the mooring mast-head and not of any part of the ship, which carried the cone of the mast away with her. Unfortunately, probably because of the weight of the mast-head gear, the bow of the ship dropped as she parted and struck the gallery surrounding the mast-head. As a result the ship's bow framing was severely damaged—much more so, to judge from photographs, than the nose of the U.S. *Shenandoah* by the tearing out of the mooring spike. The front gas-bag was, of course, deflated, and was rigged up as a bulkhead to protect





KNOCKED ABOUT A BIT.—Above is seen the nose of th U.S. Airship "Shenandoah" after suffering a somewha similar breakaway to that of the R.33, which ship is show below. The comparison is interesting.

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Stalling Speed	40 m.p.h.
Rate of Climb at Ground Level per minute	430 feet
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Distance to Unstick (in calm) ..	120 yards
Run on Ground on Landing (in calm)	80 yards
Ceiling (absolute)..	13,000 feet
Range at Cruising Speed .	4 hours
Petrol Consumption .. per gal.	20 miles
Oil Consumption .. per hour	1 pint

WEIGHTS.

Weight Empty	770 lbs.
,, of Petrol (15 gallons) ..	110 lbs.
,, ,, Oil (1⅛ gallons)	10 lbs.
,, ,, Pilot	160 lbs.
Normal Useful Load	190 lbs.
†Weight with Normal Full Load ..	1,240 lbs.

† The Certificate of Airworthiness will allow of a maximum permissible fully loaded weight of 1,350 lbs.

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the second gas compartment. The damage to the bows would naturally considerably increase the ship's resistance and must have made her unpleasant to handle. In addition, the full speed of which the ship was capable could not be used because of the very great pressure which would have come upon the first bulkhead.

Under these circumstances, recollecting that R.33 is eight years old and has a normal top speed of not more than 40 knots, it reflects every credit on Flt. Lt. Booth and his crew that they should have ridden out so fierce a gale without making more than some 120 miles of leeway. And as has been pointed out in the lay press the ability of an old ship in a damaged condition to weather that particular storm confirms the claim of the advocates of the airship that storms are not to be feared by a ship in flight.

Incidentally it appears to be the case that the whole trouble was due to the age and bad condition of the old mooring mast at Pulham, and that an accident which might well have done much to retard still further airship progress must therefore be written down to the account of that Geddesian parsimony which has distinguished our aeronautical, and particularly our airship, experimental policies for the past six years.—W. H. S.

Royal Congratulations.

His Majesty the King has sent the following message to Air Vice-Marshal Sir Geoffrey Salmond :—

Hearty congratulations to Flight Lieutenant Booth and his crew on their splendid achievement in skilfully handling R.33 in such exceptionally difficult and trying circumstances, and bringing her back safely to Pulham. I am sure the Air Force will be proud of them as I am.—GEORGE R.I.

To this message Sir Geoffrey Salmond sent the following reply :—

Your Majesty's gracious message has been communicated to Flight Lieutenant Booth and crew of R.33. They are proud to have had an opportunity of putting to the test their faith in R.33 and thus earning your Majesty's approval. The Royal Air Force deeply appreciate your Majesty's generous tribute to Flight Lieutenant Booth and his crew.

Light Aeroplane Clubs.

A meeting of the Light Aeroplane Clubs was held at the Royal Aero Club on Thursday, Apr. 16, 1925, to consider the equipment to be provided out of the financial grants from the Air Ministry.

It was reported that the Air Ministry had suggested that the Royal Aero Club should be the agents for the purchasing of the aircraft.

The Air Ministry have agreed to the De Havilland Moth type with Cirrus engine being approved for the Clubs. The following equipment was decided upon :—

The Lancashire Aero Club.—Two Moths and one spare Cirrus engine.

The Newcastle Aero Club.—Two Moths and one spare Cirrus engine.

The Light Aeroplane Section (Royal Aero Club).—Two Moths and one spare Cirrus engine.

The requirements of the Midland and Yorkshire Aero Clubs were to be notified later.

The question of insurance was discussed and deferred to a further meeting.

The following representatives were present :—Lieut.-Commander H. E. Perrin (Light Aeroplane Section, Royal Aero Club), Major G. Dennison (Midland Aero Club), Mr. John Bell (Newcastle Aero Club).

The Lancashire Aero Club were not able to attend, but their recommendations were put forward in a letter.

The orders for machines will be placed at once and deliveries may be expected early in June.

Light Aeroplane Competitions.

The Secretary of the Royal Aero Club reports that a meeting was held at the Air Ministry on Mar. 31, 1925, to discuss Light Aeroplane Competitions for 1925.

This meeting was attended by representatives of the Air Ministry, the Society of British Aircraft Constructors, the Royal Aero Club, and the principal engine manufacturers.

Having fully considered the engine question, it was decided to recommend that the competition for Two-Seater Light Aeroplanes with engines limited to a weight of 170 lbs. be held in August, 1926. It was reported that a very substantial prize would be forthcoming.

A joint meeting was held at the Royal Aero Club on Tuesday, Apr. 7, to discuss the question further.

Those present were :—

For the Royal Aero Club.—Air Vice-Marshal Sir W. S. Brancker, K.C.B., and Lieut.-Col. W. A. Bristow.

For the Society of British Aircraft Constructors.—Mr. T. O. M. Sopwith, Mr. H. T. Vane, Capt. H. E. P. D. Acland, and Sir Henry White-Smith, C.B.E.

For the Air Ministry.—Major J. S. Buchanan, O.B.E., and Lieut.-Col. L. F. R. Fell, D.S.O., O.B.E.

In attendance :—Mr. J. T. Brown, Assistant Secretary, S.B.A.C., and Lt.-Comdr. H. E. Perrin, Secretary, R.Ae.C.

The discussion covered the conditions to be imposed for the Light Aeroplane Competition to be held in August, 1926. It was agreed that the weight of the engine should not exceed 170 lbs. The aeroplane and engine must be of British manufacture, and the entrant and pilots must be British subjects. The Competition will consist of a flight over a course of approximately 1,000 miles, divided into stages. Further details were left for discussion at the next meeting.

On the U.S. Air Agitation.

The latest news available concerning the agitation in and about the Flying Services of the United States is taken from *The New York Times* of Mar. 31. The Washington Correspondent of that paper reports that Brigadier-General William Mitchell, who is the storm centre of the whole agitation, has now been appointed Air Officer of the Eighth Army Corps Area at Fort Sam Houston, San Antonio, Texas, and that he will assume command there on Apr. 26 on the expiry of his present appointment when he will automatically revert to the rank of Colonel.

The New York Times remarks that General Mitchell's new post is considered the most important field position in Army aviation and that while it is not the appointment he wanted he is satisfied with it. General Mitchell's desire was to be Air Officer of the Sixth Army Corps Area with headquarters in Chicago, but he did not apply in time.

According to the same paper Mr. Weeks, the Secretary for the Army Bureau, stated that the Texas command was given to General Mitchell not only because of his seniority but because the Eighth Corps Area has a greater concentration of troops than any other and also the greatest Air Service activities. The area covered by the U.S. Army Air Service from the headquarters at Fort Houston includes Texas, Oklahama, New Mexico, Arizona, and Colorado, and the whole of the Mexican border patrol, from the Gulf of California to the Gulf of Mexico.

As a matter of fact it almost looks as if General Mitchell's appointment to this command were definitely a part of the Great Scheme. When the war with Japan really begins the probability is that the Japanese Navy will push the U.S. Pacific Fleet out of the Pacific Ocean at the first attack and that thereafter Japanese troops accompanied by a very large air force will be landed in Mexico, whence air attacks will be made on the Southern and Central cities of the United States.

As has been indicated on several occasions in THE AEROPLANE, Japan cannot hope to conquer the United States, but by continual attacks from Mexico the Japanese may hope to weary the Americans into making a peace which will give Japan the command of the Pacific. The Japanese already have an enormous hold in Mexico and it is said that something like 300,000 male Japanese, all of whom have passed through the Japanese Army, are actually living in Mexico at the moment, all with mobilisation orders as to where to concentrate on the outbreak of war.

Thus it will be seen that it is particularly fitting that the one senior officer of the U.S. Army Air Service who has specialised on the general strategy and tactics of such a war should be appointed to the particular area in which the greatest air activities are likely to occur immediately after the outbreak of war.

When the U.S. Navy, with its habitual English pertinacity, has regained the command of the sea along the Pacific coast of the States, and when the Japanese have been beaten out of Mexico, there will be plenty of time for General Mitchell to develop the bigger strategic scheme for a combined naval and air attack on Japan itself.—C. G. G.

The Khartoum-Kenya Air Line.

According to *The Times*, the Kenya Legislature has agreed to contribute £2,000 towards the cost of a preliminary survey of an air route between Kenya and Khartoum without reference to any particular scheme.

The proposal of the Blackburn Aeroplane and Motor Co. is being submitted to the Air Ministry for technical advice. The cost of the survey is estimated at £9,000, to which it is proposed that Kenya, Uganda, and the Anglo-Egyptian Sudan contribute £6,000 and the Blackburn Company the balance.

It is understood that the maintenance of the permanent service involves a subsidy of from £30,000 (minimum) to £60,000 (maximum) annually. The Kenya Government hopes that the Air Ministry will contribute to the survey and also to the subsidy for the permanent scheme. The Belgian Government is willing to participate in the scheme.

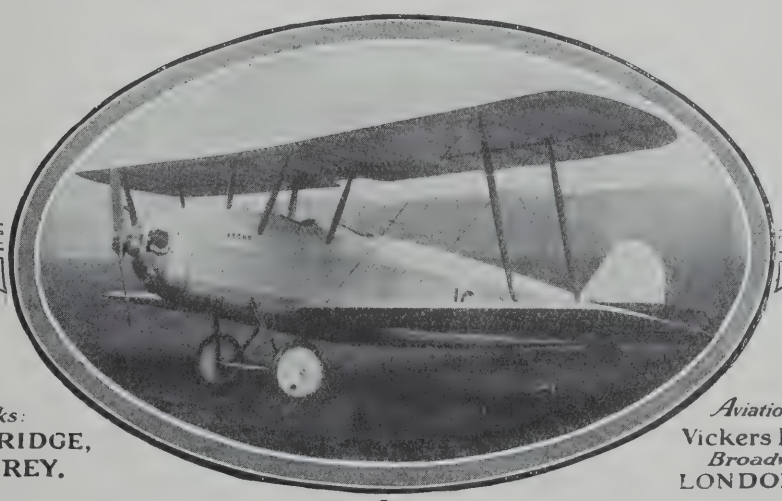
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THE ROYAL AIR FORCE.

Appointments.

Week ending Apr. 20.

General Duties Branch.—Air Commodore L. E. O. Charlton, C.B., C.M.G., D.S.O., to Air Ministry for special duty, 10/12.

Group Captain F. V. Holt, C.M.G., D.S.O., to R.A.F. Depot whilst attending Senior Officers' War Course, 22/4.

Wing Commanders G. P. Grenfell, D.S.O., to Air Ministry for duty as Attached Officer, 14/4. T. L. Leigh-Mallory, D.S.O., to R.A.F. Staff College for next Staff Course, 14/4.

Squadron Leaders L. G. S. Payne, M.C., A.F.C., to R.A.F. Depot, 14/4. R. D. Oxland, to R.A.F. Depot on transfer to Home Estab., 25/3. A. A. L. Miller, to R.A.F. Base, Gosport, on appointment to a Temp. Comn. from Navy, 31/3. L. F. Forbes, M.C., to No. 99 Sqdn., Bircham Newton, 15/4. L. T. N. Gould, M.C., to R.A.F. Depot on transfer to Home Estab., 19/3.

Flight Lieutenants T. W. Elmhirst, A.F.C., to Air Ministry, 15/5. W. E. Somervell, to No. 2 Sqdn., Manston, on transfer to Home Estab., 19/3. A. C. Collier, to R.A.F. Depot, 15/5. L. Eardley-Wilmot, to No. 4 F.T.S., Egypt, 24/2. A. N. Benge, to Air Ministry, 14/4. J. C. M. Hay, to Boys' Wing, Cranwell, 22/4. H. S. Broughall, M.C., D.F.C., to No. 207 Sqdn., Eastchurch, 14/4. J. F. Stallard, to No. 2 Sqdn., Manston, 8/4. W. R. S. Humphreys, A.F.C., to School of Photography, S. Farnborough, 31/3. W. E. Theak, to No. 13 Sqdn., Andover, 17/4. F. H. Isaac, to School of Photography, S. Farnborough, 16/4. G. G. Dawson and H. S. Broughall, M.C., D.F.C., to R.A.F. Depot on transfer to Home Estab., 25/3.

Flying Officers W. R. K. Atkinson and G. E. Newton, to R.A.F. Depot on transfer to Home Estab., 25/3. L. J. Booth, to No. 5 F.T.S., Sealand, 14/4. A. E. Pitcher, M.M., to No. 1 S.D., Kidbrooke, 1/2. C. H. Paget, to Aircraft Depot, India, 3/4. R. V. D. White, to No. 16 Sqdn., Old Sarum, 17/4. R. L. Ragg, to Experimental Section, R.A.E., S. Farnborough, 23/4. F. E. C. Benstead, to Station Commandant, Iraq, 19/3. F. W. Wrench and A. E. Platford, to R.A.F. Depot on transfer to Home Estab., 19/3. C. E. Kelly and A. D. Page, M.M., to R.A.F. Depot on transfer to Home Estab., 8/3. C. W. Cudemore, M.C., D.F.C., to R.A.F. Depot on transfer to Home Estab., 8/3. D. Macfadyen, to No. 14 Sqdn., Palestine, 19/3. H. J. Storey, to Station H.Q., Bircham Newton, 16/4. L. S. Potter, to R.A.F. Depot on appointment to a S.S. Comn., 7/4, to No. 58 Sqdn., Worthy Down, 15/4.

Pilot Officers F. S. O'Hanlon, to No. 39 Sqdn., Spittlegate, on appointment to a Perm. Comn. from R.A.F. Cadet College, 12/3. W. F. Langdon, to No. 14 Sqdn., Palestine, 4/4. R. C. L. Limbert, to No. 11 Sqdn., Netheravon, 28/3.

Medical Branch.—Flight Lieutenant T. C. St. C. Morton, M.D., D.T.M. and H., to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 24/3. Flying Officers H. W. D. Mackenzie, M.D., to Research Laboratory and M.O.S. of I., Hampstead, 1/4. C. J. Griffiths, to R.A.F. Depot, 6/4. T. W. Wilson, to I.A.A.D., Henlow, 31/3. (Q.M. Medical) P. H. Musgrave, to No. 1 School of T.T. (Boys), Halton, 7/5. D. B. Smith, M.B., to R.A.F. Depot, 17/4.

Stores Branch.—Flight Lieutenants E. M. Cashmore, to Station H.Q., Northolt, 26/3. E. E. Porter, M.B.E., D.C.M., to Station H.Q., Duxford, 27/4. Flying Officers R. G. Fussell, to Stores Depot, Egypt, 23/3. H. A. Lotherington, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 19/3. W. T. Lewis, to Stores Depot, Iraq, 3/4.

Accountant Branch.—Flying Officer J. M. Adams, to No. 6 Arm. Car Coy., Iraq, 4/4.

The R.A.F. Display.

The Air Ministry announces that the R.A.F. Pageant, which was instituted in 1920, has now been renamed the Royal Air Force Display. It will take place on Saturday, June 27th, at the London Aerodrome, Hendon. His Majesty the King, Chief of the Royal Air Force, hopes to be able to attend.

This annual review of the flying units is an integral and important part of the annual training of the R.A.F., and provides a valuable stimulus to keenness and efficiency in the many squadrons taking part in the competitions and displays.

A programme has been arranged which will fully equal that submitted in previous years, and new features are being introduced which will enable the public to appreciate the developments that are constantly taking place in the aerial arm.

As in the case of the Royal Tournament all the proceeds are devoted to Service charities.

The Gordon Shephard Awards.

The Gordon Shephard Memorial Prizes, which are given annually for the best essays submitted by members of the Royal Air Force on subjects selected by the Air Council, have been awarded as follows in the 1924 competition :—

1st Essay.—1st Prize, Flg. Off. E. J. Kingston McCloughry, D.S.O., D.F.C.; 2nd Prize, Flt. Lt. A. S. G. Lee, M.C.

2nd Essay.—1st Prize, Sq. Ldr. J. L. Vachell, M.C.; 2nd Prize, Wing. Cdr. E. D. Robertson, D.F.C.; 3rd Prize, Sq. Ldr. L. L. MacLean.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident near Shaibah, Iraq, to a D.H.9a of No. 84 Sqdn., Shaibah, on Apr. 17, 1925, Flg. Off. Thomas Thomson was killed, Flt. Lt. Cyril Jameson Truran, A.F.C., the pilot of the aircraft, being uninjured.

The Defence of London.

A recruiting week, for the purpose of increasing the ranks of the Territorial Brigades responsible for the Air Defences of London, will be held in London from Apr. 27 to May 2.

If the weather permits, aeroplanes will appear over London each night and will drop bombs consisting of pamphlets appealing to men between 17 and 45 to join the Air Defence forces. The anti-aircraft guns will reply to the invaders. Guns and searchlights will be placed in Hyde Park, Clapham Common, and other open spaces. The municipal authorities in various parts of London are co-operating, and the Town Halls will be used as recruiting stations.

A New R.A.F. Title.

The Air Ministry announces that His Majesty has been graciously pleased to approve of the most senior rank in the Royal Air Force being changed from Marshal of the Air to Marshal of the Royal Air Force.

The Times of Apr. 18 states :—

It is notified by the Admiralty that commissioned officers of the Royal Navy, Army, and Royal Air Force will in future rank with one another, according to seniority or date of appointment, as follows :—

Royal Navy.	Army.	Royal Air Force.
Admiral of the Fleet	Field-Marshal	Marshal of the Royal Air Force
Admiral	General	Air Chief Marshal
Vice-Admiral	Lieutenant-General	Air Marshal
Rear-Admiral	Major-General	Air Vice-Marshal
Commodore, 1st and 2nd Class	(Colonel-Commandant) (Colonel on the Staff)	Air Commodore
Captain	Colonel	Group Captain
Commander	Lieutenant-Colonel	Wing Commander
Lieutenant-Commander	Major	Squadron Leader
Lieutenant	Captain	Flight Lieutenant
Sub-Lieutenant	Lieutenant	Flying Officer (or Observer Officer)
Commissioned Officer from warrant rank	Second Lieutenant	Pilot Officer

[Note :—The foregoing table gives the impression that the Admiralty has exalted certain ranks of the Royal Navy. Thus a Commodore, First or Second Class, R.N., ranks with and before a Colonel-Commandant in the Army and above a Colonel on the Staff whereas an Air Commodore, R.A.F., ranks with but after a Colonel on the Staff and below a Colonel-Commandant.

Furthermore a Post-Captain, R.N., of any seniority now appears as ranking with and before a Colonel in the Army whereas hitherto a Post-Captain, R.N., up to three years' seniority in the rank ranked with and before a Lieutenant-Colonel.

Also heretofore a Commander, R.N., has ranked with but after a Lieutenant-Colonel whereas according to this new arrangement it would appear that any Commander, R.N., ranks with and before a Lieutenant-Colonel.

Still further the Navy appears to have no rank for young officers corresponding to a Second Lieutenant or a Pilot Officer. Apparently their only commissioned rank of that grade is that of a commissioned officer from warrant rank which means that the holders of this lowest commissioned rank in the Navy are men of mature age. Midshipmen are still carried on warships and actually take command of picket boats and so forth but one gathers from naval officers that they are in fact officers under instruction and do not permanently command any portion of the ship's crew.—Ed.

The C.A.S. at Cambridge.

On Wednesday next, Apr. 29, Air Chief Marshal Sir Hugh Trenchard, Chief of the Air Staff, is to deliver an address to the University of Cambridge at the Union Society Hall, at 8 p.m. Sir Hugh has kindly consented to deliver this address at the invitation of the Cambridge University Aeronautical Society, which has already done so much good work at the University.

There is no doubt that there will be an enormous demand for admission to the Union to hear the distinguished officer who is not only responsible for the R.A.F. to-day, but was in the past the creator of our Air Power from the days in 1911 when the whole R.F.C. went to France with the British Expeditionary Force and he was sent to Farnborough to create a new Flying Corps out of a row of empty sheds with two or three officers who were unfit for active service as his only assistants.

Readers of The Aeroplane, whether actually at the University or in the vicinity of Cambridge, who wish to attend on this important occasion, would be well advised to write immediately to the Secretary of the Cambridge University Aeronautical Society, Queen's College, Cambridge, and ask for tickets.

Air Operations in Iraq.

The following account of Royal Air Force operations in Iraq is taken from *The Daily Express* of Apr. 20, with due acknowledgments. A request for an official statement by the Air Ministry was referred to the Colonial Office. The Colonial Office reply was, "We don't know anything about it, ask the Air Ministry" :—

Baghdad, Sunday, Apr. 19.—Events in Mesopotamia have during the week-end taken a turn which, in the light of the knowledge of general unrest in the forward areas, must be described as serious, despite official views to the contrary.

In the last twenty-four hours the Royal Air Force has been engaged in two bombing operations, one against a number of villages in the Sinjar range of mountains on the Syrian frontier, the other against villages south of Sulimanyeh.

The results, as far as it is possible to ascertain them without an official information, are :—

One Bristol fighter shot down in flames in the Sinjar area. Flg

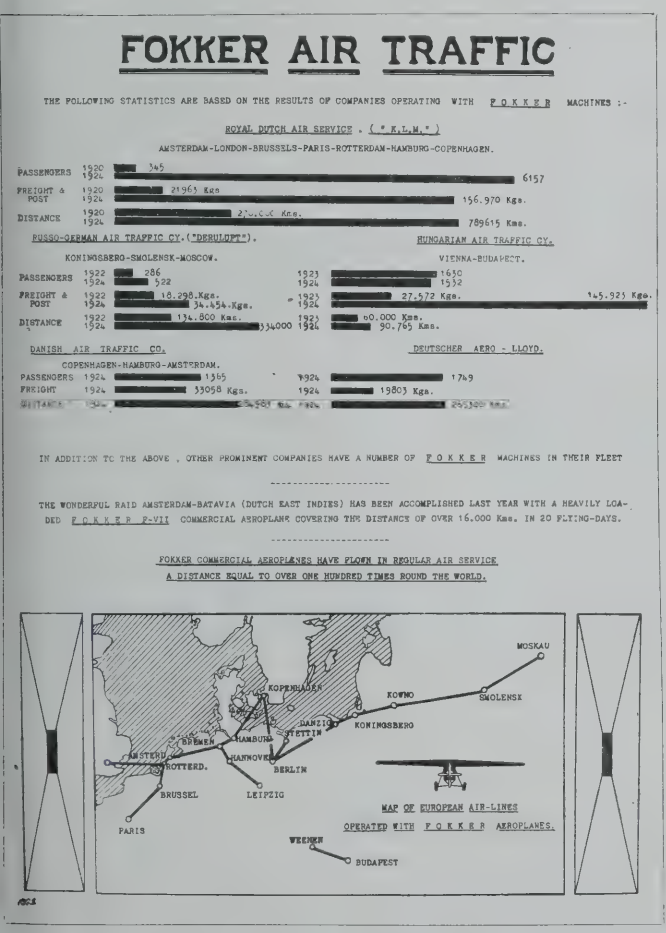
THE NEW FOKKER COMMERCIAL AEROPLANE

TYPE F.VII

DEVELOPED FROM THE FAMOUS FOKKER F.III & F.IV



The Fokker F.VII with 450 h.p. Napier "Lion" engine—a splendid specimen of Anglo-Dutch collaboration.



Statistics of 1924 of the principal European Air Lines, operated exclusively with Fokker aeroplanes.

It is remarkable that the statistics of the Air Lines, on which FOKKER Commercial machines are used, show a minimum of accidents and a maximum of regularity.

N. V. NEDERLANDSCHE VLIEGTUIGENFABRIEK FOKKER

Rokin 84, Amsterdam

Off. Pontifex and AC. Barber, of the Sixth Squadron (Mosul) were killed.

Two Bristol fighters crashed in the operations near Sulimanyeh. Further particulars are not yet known.

The R.A.F. also sustained further casualties in the south, where a D.H.9 belonging to 84 Squadron (Basra) crashed yesterday, probably in a sand-storm. Flg. Off. T. Thomson was killed and Flt. Lt. C. J. Truran, the pilot, was slightly injured.

The air attack on the villages on the northern side of the Sinjar Mountains was the result of the failure of a tribal chief, Daud-al-Daud, to make peace with a rival leader, Hemo-Shero, the head of the tribes on the southern side of the mountains.

Both are members of the celebrated Yezidis, or devil worshippers, reputed by some to be one of the Lost Tribes of Israel. Other authorities merely consider them an offshoot of the northern Kurds.

They worship the Malik Yano, or the Peacock King, and are bitter enemies of Mohammedans. One of the commands in their strange ritual is: "Kill a Moslem and commit suicide!" They are brave and warlike, and past masters in guerrilla warfare.

They never submitted to the Turkish régime. Whenever an attempt was made to conquer them they retired to inaccessible caves in the higher mountains and fought off all aggressors.

They have remained peaceful under British rule until inter-tribal strife broke out recently, Daud-al-Daud attacking a number of the southern villages. The Baghdad Government intervened, inviting the two leaders to a conference at Mosul.

When Daud-al-Daud ignored the invitation the R.A.F. dropped proclamations giving him twenty-four hours to come in. This was without avail, and on Thursday a message was dropped ordering him to evacuate seventeen villages within six hours. Daud-al-Daud coolly acknowledged this message, but declined to act when the time limit expired.

Four Bristols of the 6th Squadron went out on Friday and dropped a number of 120-pound incendiary bombs, concentrating their attack on Jaddalah and Mirkhan. The airmen met with resistance, and there was intense rifle fire until dark.

They resumed the attack at daybreak. Shortly after 6 a.m. the machine containing Flg. Off. Pontifex and AC. Barber, which was flying at 2,000 feet, was seen to burst into flames and dive earthwards outside Mirkhan. By the afternoon several villages were in flames, but the resistance continued.

The second operation was carried out against the villages of Price-Ulia and Price-Sufla, south of Sulimanyeh, as a reprisal for the murder of three members of the Mesopotamian Police. On the night of Apr. 13 a band of tribesmen, believed to have been sent by the notorious Kurd outlaw, Sheik Mahmud, entered Halabja, attacked the post, and stabbed three police to death, decamping with their rifles.

Bombs were dropped on the villages believed to be occupied by the assailants. A squadron of Mesopotamian cavalry is also proceeding to the scene of the attack.

So far as can be learned the R.A.F. was merely carrying out demonstration flights in hostile territory in the Sulimanyeh area when the two machines crashed.

The situation in the Sinjar area is not likely to have any bearing on the Kurdish rising or on Turkish activities, although Sulimanyeh, which is part of Southern Kurdistan, has conceivably been stirred up by Shiek Mahmud at the instigation of the Turks.

A few new Turkish detachments have been moved up to the frontier, but there is nothing in the situation there to give ground for suspicion that the Turks are attempting anything in the nature of a surprise advance.

The following account of the operations was issued by the Colonial Office later:—

Air action was taken in Iraq on Apr. 18 against a Yezidi chief who had three times refused to attend a Government conference at the headquarters of the Beled Sinjar area. This conference had been summoned for the purpose of settling the rival claims for supremacy of himself and another local chieftain. Intermittent fighting, involving local casualties, had for some time been taking place between the two factions.

The following British casualties are reported:—

Flg. Off. Rupert William Pontifex and AC. Edward Barber killed. The machine in which they were flying was seen to crash and was totally burnt. The cause of the crash is reported to have been rifle-fire from the ground. The bodies have been recovered and are being brought to Mosul for burial.

[*R.A.F. Sports will be found on page* 394.]

Sir David Salomons.

Sir David Lionel Goldsmid-Stein-Salomons, who died as the result of an operation on Apr. 19 last, at the age of 73, would probably have been better known in aeronautical circles had he been born 20 to 30 years later. For he was essentially of that now-too-rare type of man who, blessed with ample private means, devotes his time and his abilities to the furthering of progress in new, practical applications of human knowledge.

In electrical circles his name was well known some thirty to forty years ago. It is said that his private house near Tunbridge Wells was the first house in Britain, if not in the world, to be equipped with incandescent electric lighting. The whole of this installation was carried out by Sir David, and practically every fitting employed was home-made. His book—entitled, if memory serves, "The Electric Light in the Home"—was for long a standard text-book on installation and, in addition, a valuable piece of propaganda.

In the field of motor traction Sir David Salomons similarly did valuable pioneer work, and designed and constructed a number of electric vehicles at a very early date. He took a very considerable interest in ballooning and aeronautics, and was a founder member of the Royal Aero Club, and has for many years been a member of the Council thereof.—W. H. S.

Mr. J. E. Withers.

Those who were associated with aviation in its very early days, and more especially habitués of Hendon in its great days when the late Richard Gates and Mr. Bernard Isaac made it one of London's great show places, will learn with deep regret of the death, at the age of 81, from a stroke on Mar. 31, of Mr. J. E. Withers, one of the founder members of the Royal Aero Club, who joined that association early in 1910.

At Hendon Mr. Withers' Rolls-Royce always had its special place in the front row next to the gate leading from the enclosure to the aerodrome, and there one was sure to meet in the course of the day everybody of any importance who happened to be present. Even in the earliest days of Hendon Mr. Withers appeared to be an old man, but he seemed to have acquired the secret of perpetual youth.

One remembers one day at Hendon when he appeared with a brand new Rolls saloon asking him what sort of pace he could get out of it, meaning naturally what speed his driver had done on it. Mr. Withers, who was then, if one remembers rightly, some 70 years of age, said that the best he had ever got out of it on the road himself was something over 70 miles an hour, roughly a mile per hour for each year of his age, an idea which suggested increasing speed at later dates.

During the War 1914-18 Mr. Withers devoted a great deal of his time to running his own motor-yacht on Southampton Water and taking out on it for the day large parties of men from Netley Hospital, particularly those who were suffering from insomnia. He used to entertain them to enormous lunches on board, and the hospital people said that his food and fresh-air treatment definitely turned the scale in favour of a number of cases. On one occasion putting out from the steps at Southampton in a dinghy to his yacht with a friend slightly younger than himself the boat was upset by one of the crew standing up and over-balancing himself. Mr. Withers not only saved his friend, but, after having deposited him in the care of people on the steps, swam out and fetched the dinghy, after which he rowed the party out to the yacht himself, to avoid catching cold. In relating the story Mr. Withers remarked quite naturally of his friend that "The poor old chap couldn't swim."

Up to within a few days of his death Mr. Withers was frequently at the Royal Aero Club, and, leaving his age out of the question, he played a very good game of billiards. Though he did not spend money actually on aviation, as he possibly might have done by hiring machines and entering them for races by way of advertising himself, a good many people concerned with aviation profited by Mr. Withers' private generosity and one doubts whether he ever got back any high percentage of the money which he lent to people in difficulty during the bad time in aviation after the War. Altogether he was a fine old sportsman and will be sadly missed by those who knew him.—C. G. G.

Mr. George Powell.

It is with the very greatest regret that one has to announce the death of Mr. George Powell on Sunday night, as the result of a motor-car accident some ten days before. It was practically certain from the first that his injuries would be fatal and he never recovered consciousness fully.

George Powell was one of the outstanding personalities in civil aviation, and was universally regarded as one of the best and steadiest pilots. He was too young for service at the beginning of the war but as soon as he was old enough he joined the R.A.F. After the Armistice he was posted to a communication squadron and carried many distinguished passengers between Paris and London during the Peace Conference.

On its formation he joined Air Transport and Travel Ltd. as a pilot, and he flew for that firm until it closed down in December, 1920. In March the following year he joined the Instone Air Line Ltd. and flew for them practically without a break until April last year, since when he has flown continuously for Imperial Airways Ltd.

As a commercial pilot he was brilliant, and there have been many passengers who have always insisted on having George Powell as a pilot whenever they flew. He had beautiful hands, and to see him land a D.H.18 or a D.H.34 as slowly as an Avro was always a joy.

He confessed to one recently that he was getting tired of regular route flying, and was particularly anxious to get an appointment as test pilot with a manufacturing firm.

He was a very sincere friend to all and was one of the few people one knows who did not object to receiving as well as to giving candid criticism, and this fact often enabled the air to be cleared at difficult times.

Civil Aviation has suffered a very real loss, for George Powell was of a type which is, unhappily, too rare. To his relatives and friends one offers on behalf of all readers of this paper heartfelt sympathy.—G. D.

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DESIGNERS AND MAKERS OF ALL TYPES OF AIRCRAFT

For British and Foreign Governments.

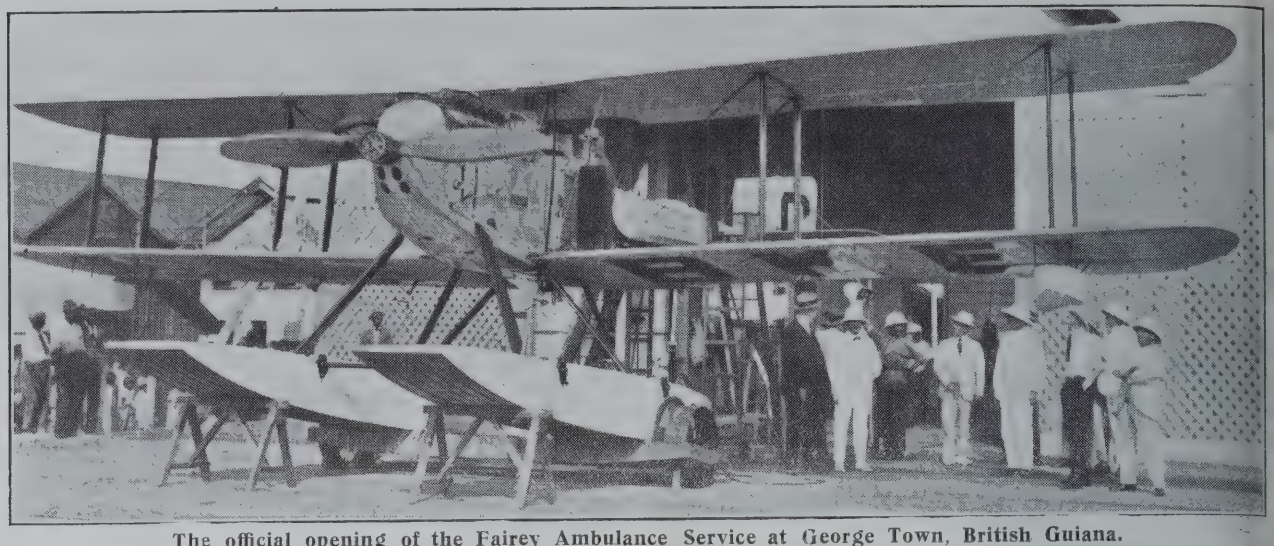


GLOSTER "MARS VI" single-seater Fighter with Jaguar engine. (Also fitted with Jupiter engine.)

WINNERS OF THE AERIAL DERBY, 1921-1922-1923.
HOLDERS OF THE BRITISH SPEED RECORD, 212.2 M.P.H.
RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.



The official opening of the Fairey Ambulance Service at George Town, British Guiana.

Faireys in British Guiana.

Some considerable time ago THE AEROPLANE made known the intention of a group of influential people in British Guiana to run an air line between George Town and certain up-country places which cannot be reached except by laborious and dangerous journeys in boats along rivers consisting largely of rapids and infested with dangerous reptiles. At about the same time Major Hemming, of the Aircraft Operating Co. Ltd. paid a visit to British Guiana and surveyed the route for an air line up to the diamond fields, after which visit he reported that air transport was not only the cheapest but the safest way of communication with the interior.

During this period the famous Balata Company were considering organising an air route of their own, chiefly for the convenience of fever-stricken or injured officials of the Company from their up-country property, over 200 miles away, to the hospital at George Town. As the result an order was given to the Fairey Aviation Company Ltd. for the construction of a special passenger-carrying seaplane, and the Fairey Aviation Company proceeded to produce a modification of their World-famous III D. seaplane, fitted with a Rolls-Royce Eagle IX engine and equipped as an ambulance.

The machine has recently been delivered to the Balata Company at George Town, and made its first flight there in a temperature of 155°. A proper shed and slipway was erected ready for the arrival of the machine. It made its first test flight piloted by Capt. G. N. Trace, with Mr. E. E. Hodgkins, the owner of the machine, as passenger.

The official ceremony of opening the air line was performed by the Governor of the Colony, His Excellency Sir Graeme Thompson, K.C.B., and Lady Thompson, who were taken for a flight over George Town and the neighbourhood.

Some idea of the benefits which the machine will con on the employees of the Balata Company may be gathe from the fact that the boat journey from or to George To takes anything between 17 and 21 days, whereas the journ by aeroplane can be done in two hours.

The Deutsch Rundflug.

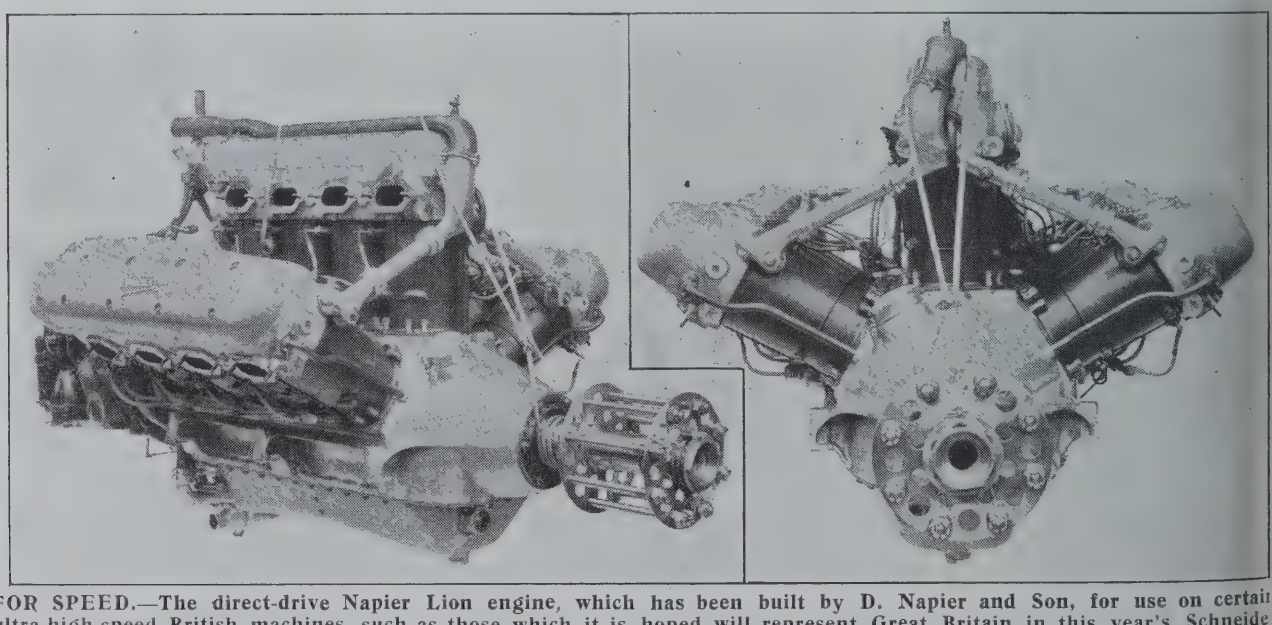
A sporting competition on a very ambitious scale is to ta place in Germany during ten days beginning May 3 350,000 marks (£17,500) have been subscribed to the pri fund, and the contest will be supervised by the Aero Cl of Germany.

The contest is open to three categories of machines: not exceeding 40 h.p., B, not exceeding 80 h.p., and C, n exceeding 120 h.p., so that the whole affair is for machin of very modest power.

The competition involves five circular flights each approximately 1,100 km., each starting from and ending Berlin, and in total covering practically the whole Germany.

The first flight, May 31—June 1, is over the route Berli Schwerin - Hamburg - Altona - Bremen - Münster - Cass Magdeburg-Berlin. "A" machines (under 40 h.p.) mu land at Schwerin and Münster, "B" machines (under h.p.) at Hamburg and Cassel, and "C" machines (und 120 h.p.) at Bremen and Magdeburg.

The second flight (June 2—June 3) is from Berlin Hanover - Padeborn - Frankfurt - Darmstadt - Goth Weimar-Chemnitz-Dresden to Berlin. Compulsory landi places are:—"A" machines, Hanover and Darmsta "B" machines, Padeborn and Gotha, "C" machin Frankfurt, Weimar and Dresden.



FOR SPEED.—The direct-drive Napier Lion engine, which has been built by D. Napier and Son, for use on certain ultra-high-speed British machines such as those which it is hoped will represent Great Britain in this year's Schneide Cup Race.

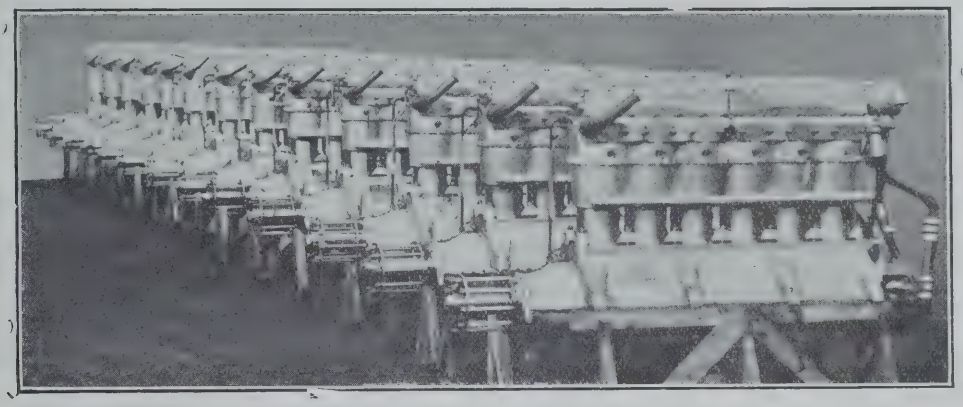
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GREAT FLIGHT OF LARGE 3-ENGINED PASSENGER MACHINE.

5,000 MILES UNDER ADVERSE CONDITIONS.

BELGIUM TO KINSHASA (Belgian Congo).



A BATCH OF "PUMAS" READY FOR DESPATCH AT OUR DEPOT.

A Handley Page three-engined machine fitted with 2 "PUMA" engines and 1 "EAGLE," piloted by Lieut. Thieffry, has recently completed a flight from **Brussels** to the Belgian Congo (5,000 miles) crossing the **Sahara** and **equatorial forests** under the worst weather conditions possible, including **tropical rain and sun,** for over six weeks without shelter.

The "PUMA" engines used on this flight were prepared and supplied by

AIRCRAFT DISPOSAL COMPANY LTD.

REGENT HOUSE,

89, KINGSWAY, LONDON, W.C.2.

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Cables: "Airdisco, London."

On June 4—5 the route is Berlin-Dessau - Erfurt - Würzburg - Stuttgart-Bamberg-Halle-Berlin, and the compulsory stops :—"A" machines, Dessau and Stuttgart, "B" machines, Erfurt and Bamberg, and "C" machines, Würzburg and Halle.

On June 6—7 the route is Berlin-Naumburg - Nürnberg - Augsburg - München-Hof-Leipzig-Berlin, with compulsory landings at :—"A" machines, Naumburg and München, "B" machines, Nürnberg and Hof, and "C" machines, Augsburg and Leipzig.

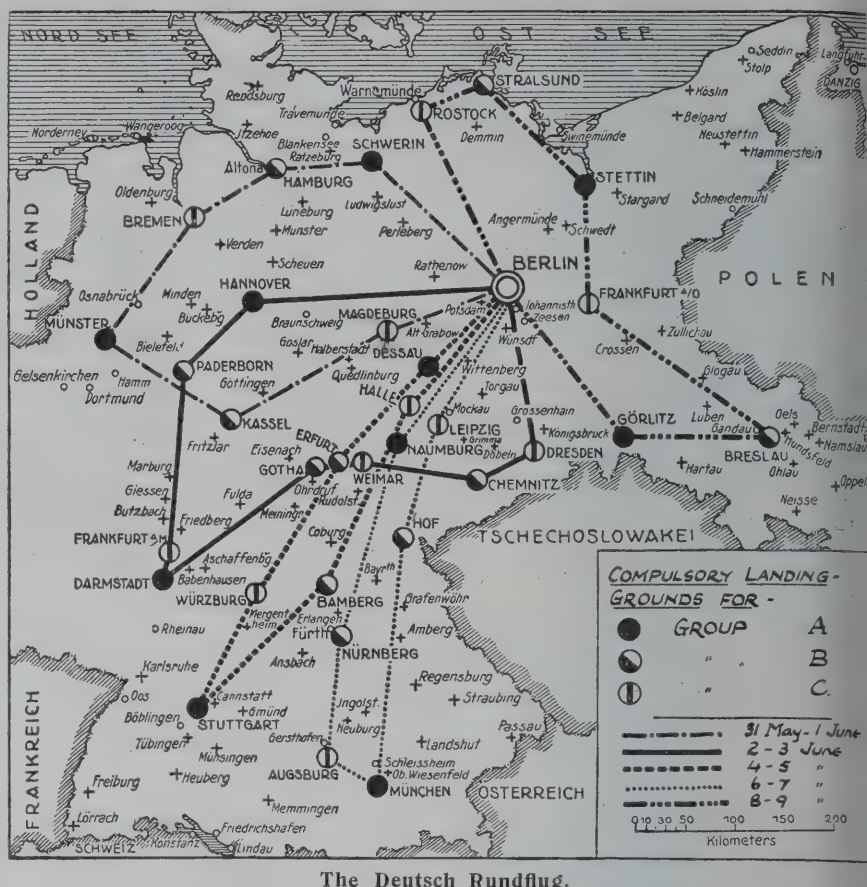
The last flight (June 8—9) is Berlin-Görlitz-Breslau-Frankfurt (on Oder)—Stettin-Stralsund-Rostock-Berlin. The compulsory stops are :—"A" machines, Görlitz and Stettin, "B" machines, Breslau and Stettin, and "C" machines, Frankfurt and Rostock.

All machines must be built in Germany, but foreign engines are admissible. The chief prizes are :—

The B.Z. (Berliner Zeitung), open to classes A and B only, of 100,000 marks divided into 25,000 marks, 15,000 marks, and 10,000 marks, in each of the classes. This will be awarded on a formula which is essentially a reliability measure.

The Boelcke Prize, open to class C only, is of 50,000 marks, and is awarded on a similar basis to the B.Z. prize.

The Otto Lilienthal Prize, of 105,000 marks, will be awarded on an all-round performance basis of a general nature, not unlike the Air Ministry's Light Aeroplane Competition.



The Deutsch Rundflug.

The Richthofen Prize, of 45,000 marks, will be given for the best performance by German engines in the B.Z. and Boelcke competitions.

The German Aero Club has in addition to the prize money a sum of 400,000 marks for the purchase of aeroplanes of under 70 h.p. entered for the competition.

Up to Apr. 1 no less than 86 entries had been made to the Aero Club. What would happen to the British Royal Aero Club if it received 86 entries for a flying meeting?

The 1925 Vauville Meeting.

The annual French meeting for gliders and light aeroplanes, promoted by the *Association Française Aérienne*, will again be held at Vauville, but this year on the permanently equipped experimental aerodrome which has been secured by the association with the assistance of the municipal authorities of Cherbourg and the Under-Secretary of State for Air. The meeting is open from July 26 to Aug. 9, inclusive, but may be extended at the discretion of the officials of the meeting for a further week.

At the present moment the prize fund amounts to 100,000 francs.

The contest is open to either gliders or light aeroplanes. In the latter class the distinction between light and other aeroplanes will be based solely on a fuel consumption test which all machines must pass before taking part in any of the competitions proper. This test will consist of a flight round a measured circuit of 50 km. (31 miles), including a climb to 2,000 m. (6,560 ft.), all to be concluded in not more than two hours. The maximum permitted consumption in this flight will be 8 kg. (17.6 lbs.) for single-seaters, and 12 kg. (26.4 lbs.) for two-seaters. This means about 13 miles per gallon for single-seaters, which, even including the climb, could easily be achieved by many machines far outside the usually accepted limits of the light aeroplane.

There will be a daily race for engined machines round a course of approximately 70 km. (43 miles). A first prize of 1,000 francs and a second prize of 500 francs will be awarded to the winner of each daily race, and prizes of 8,000, 4,000 and 1,500 francs, to the 1st, 2nd, and 3rd, in the whole series of races. In taking results for the whole series, the prizes will be awarded on the basis of average speed over the whole series; machines however which have completed the maximum number of daily circuits always taking precedence over those who have completed fewer circuits even at a higher speed. Any circuit not completed within three hours of the official starting time is counted as not completed.

5,000 francs will be awarded to the machines showing the lowest fuel consumption on a fixed course of abo 140 km. (86 miles). This course is actually to consist of t laps of the daily race circuit, and the first of these is to timed and will count as the daily race on the day fixed this contest. Thus there is an inducement to combi economy with speed The total prize money will be divid into 1st, 2nd, and 3rd prizes of 2,500, 1,500, and 1,000 fran

An altitude contest will also be held, which may be co peted for at any time. Prizes of 5,000, 3,000, and 2,000 fra will be awarded for this. A minimum of 3,000 m. (9,800 f must be reached.

For gliders, there will be daily prizes of 400 francs ea for the competitor making the flight of maximum duratio and for that reaching the maximum height above the po of taking-off. No duration less than 10 mins., and no heig less than 50 m. (164 ft.) will qualify.

10,000 francs will be awarded, at the discretion of t judges for what appears to them to be the most useful e perimental glider trials made at the meeting, having gard to the possibilities of applying such experiments to t design of full-scale machines.

5,000 francs will be awarded for training gliders. The machines must be flown at the meeting by one or mo pupils not yet qualified as pilots, and the prizes will awarded on the basis of the maximum duration of flig achieved in these machines.

10,000 francs, divided into 7,000 and 3,000 francs, will awared for the gliders which succeed in keeping in the for the maximum, and the second maximum, time, over f ground. A minimum of two minutes will be required qualify.

7,000 francs, divided into 5,000 and 2,000 francs, will awarded to the gliders covering the maximum distances one flight A minimum of 5 km. (3 miles) will be require

A sum of 5,000 francs will be awarded at the discretion the jury for the most useful instruments presented. The instruments are to be judged as to their value for obtaini from the glider to which they are fitted aerodynamic da serviceable for design purposes of the type which is n obtained from the wind tunnel.

The Gordon Bennett Balloon Race.

Nineteen balloons, representing seven nations, have be entered for the annual Gordon-Bennett Cup contest, whi will start from Brussels on June 7. The entries are follows :—Great Britain, France, Belgium, United State Italy, and Spain, three balloons each; Switzerland, one.



The Blackburn Company's designs are based on straightforward engineering practice embodying the most advanced ıtific accomplishments. Steel continues to monopolise an ever increasing position in their designs.
16 years' reputation for reliability stands behind every machine, part or component leaving their Works.

"Propellers, Leeds." **THE BLACKBURN AEROPLANE AND MOTOR CO., LTD., OLYMPIA, LEEDS.** *Tel.: 601 Roundhay.*
rimental Factory : **Brough, nr. Hull.** **London Office : Amberley House, Norfolk Street, Strand, W.C.2.** *Tel.: Central 7522*

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE WEEK ENDING APR. 5.

Trips per Day.—Monday, 14; Tuesday, 17, Wednesday, 15; Thursday, 16; Friday, 14; Saturday, 14; Sunday, 12.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 52, passengers 196, freight 6 tons.

AIR UNION:
Paris—London: Machines 32, passengers 168, freight 8½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 38.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 4, passengers 14.

SPECIAL MACHINES:
De Havilland Hire: Machine 1, passengers 2.
Mr. Leslie Hamilton's Martinsyde to Le Touquet with one passenger.

Total number of trips by British machines: 54, carrying 199 passengers. Foreign machines: 48, carrying 220 passengers.

Comparative Figures:

For week ending Apr. 12:
Machines, 102, Passengers, 419; Crews, 131; Total personnel, 550.

Corresponding week, 1924:
Machines, 39; Passengers, 163; Crews, 59; Total personnel, 222.

Corresponding week, 1923:
Machines, 96, Passengers, 366; Crews, 156; Total personnel, 522.

Corresponding week, 1922:
Machines, 75; Passengers, 211; Crews, 128; Total personnel, 339.

Corresponding week, 1921:
Machines, 53: Passengers, 179; Crews, 69; Total personnel, 248.

Corresponding week, 1920:
Machines, 36. Passengers, 32; Crews, 36; Total personnel, 68.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 12; Tuesday, 18; Wednesday, 16; Thursday, 0; Friday, 24; Saturday, 18; Sunday, 10.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 56, passengers 261, freight 7 tons.

AIR UNION:
Paris—London: Machines 34, passengers 146; freight 6½ tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 8, passengers 15.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines, 0, passengers 0.

Total number of trips by British machines: 56, carrying 261 passengers. Foreign machines: 42, carrying 161 passengers.

Comparative Figures:

For week ending Apr. 19:
Machines, 98; Passengers, 422; Crews, 132; Total personnel, 552.

Corresponding week, 1924:
Machines, 37; Passengers, 156; Crews, 61; Total personnel, 217.

Corresponding week, 1923:
Machines, 93; Passengers, 366; Crews, 153; Total personnel, 519

Corresponding week, 1922:
Machines, 96. Passengers, 171; Crews, 149; Total personnel, 320.

Corresponding week, 1921:
Machines, 55; Passengers, 183; Crews, 70; Total personnel, 253.

Corresponding week, 1920:
Machines, 44, Passengers, 46; Crews, 46; Total personnel, 92

Croydon Notes.

The chief event of the week was the safety-first demonstration on Wednesday, which is described elsewhere in this paper.

It is interesting to note that Mr. Fokker was extremely unwell at the demonstration, and afterwards he was compelled to lie down and rest.

It had been intended that he should give a further demonstration the following day and for that purpose Mr. Leverton invited a number of transport agents to the aerodrome. However, owing to the increasing gale all heavier-than-air transport was held up, and so the demonstration was abandoned.

On Friday afternoon the Earl and Countess of Kinnoull accompanied by a friend left for Paris in a special D.H.50. Lord Kinnoull himself intended to return to-day (Wednesday) in a dual-control D.H.9.

The Avro Commercial has not yet taken the air again as the airscrew was damaged on arrival, and another one has not yet been obtained.

For "reasons of state" one will not be filling this space oneself for the next few weeks. However one can promise readers far more entertainment from the pen of one's *locum tenens* and one apologises in advance for any insults which he may perpetrate.—G. D.

[In fact G. D. means "circumstances over which he has no control." All good wishes will be with him.—C. G. G.]

Northern Air Lines, Ltd.

Northern Air Lines Ltd. were unfortunately compelled t break their 100 per cent. regularity last Wednesday owing t the appalling weather conditions, but as all other air trans port, with the exception of R.33's little jaunt, was also sus pended on that day, Northern Air Lines cannot really grumble

Mr. McIntosh went across on the D.H.50 on Wednesday an had a very rough time and he was only just able to keep th machine in the air. He landed at Malone, which is th Belfast Terminal Aerodrome, in a very severe hailstorm an having come to rest was waiting for the people to come an hold his wing-tips while he taxied in. Suddenly a stron gust of wind came along and just picked the machine u and placed it gently but firmly in the hedge, fifty feet awa Neither the machine nor Mr. McIntosh were damaged in an way except for a slight chip in the airscrew, which is repair able.

Thursday was even worse than Wednesday, as the R.3 found, and so there was no alternative but to wash out th service altogether. So strong was the wind that when M McIntosh came over on Wednesday it took him 1 hour. 1 mins. for the trip which usually takes only 25 mins. Ho bad the weather was may be judged from the fact that a the boats were at least two hours late.

Mr. McIntosh says that he has never known any route o which the weather is so variegated. Malone Aerodrome the moment is very soft and a landing in heavy rain looks lik an alightment of a seaplane. But as soon as the surface b comes harder it will be a very good aerodrome indeed. It is expected that the extensions to Carlisle and Londonderr will be opened at the end of this month.

On Flying the D.H. Moth.

Through the courtesy of the de Havilland Aircraft Co., th writer has been able, after watching the D.H. Moth in th process of manufacture, to test it in the air himself. The tw points that impressed themselves immediately on his min were the comfort in handling of the controls and the complet adequacy and reserve power of the engine.

Owing to the very efficient silencing, one was, for th first time in one's experience, not left in the temporaril deafened condition which is the result of flying without helmet, and conversation between the two cockpits should b quite possible, even with the engine "all out," without th usual head-phones.

The first surprise was during a short flight with M Broad, when one found that in spite of the fact that th ailerons are only fitted to the lower planes, the machine very sensitive laterally. It is consequently a joy to fly i all weathers, as was proved on the following day, when strong wind was blowing, and one had the opportunity t test it to one's own satisfaction. Though the weather wa reputed to be very bumpy, the bumps were scarcely felt a all, owing to the ease with which they could be corrected.

Admittedly as a training machine the Moth will be no en courager of the ham-fisted type of pupil. But pilots traine on this machine will have the enormous advantage of acqui ing from the start that lightness of handling which, it mu be confessed, was very difficult to impart to pupils on th heavy-handed instructional machines which were former so much in use. ("Avros" are not referred to here.)

As a convincing proof of the reserve power of the engi one found that the machine looped easily at something les than the maximum level flying speed, flown solus. And, a though there was not time to test it for ceiling, the clim was quite fast enough to satisfy the writer's requirement which were to find a really satisfactory instructional aer plane which was also economical in fuel and upkeep.

As expected, stalling the Moth leads to no alarming dro but merely to that slight "sinking feeling." Which is n surprising, as she is controllable at 40 m.p.h.

When coaxed into a spin she spins fairly fast, owing the short span, but a straightened rudder brings her out i stantly. An adjustable spring on the joy-stick, fore-and-af takes the place of the adjustable tail usually found on larg machines, so that for touring purposes the machine is suitable as for instructional.

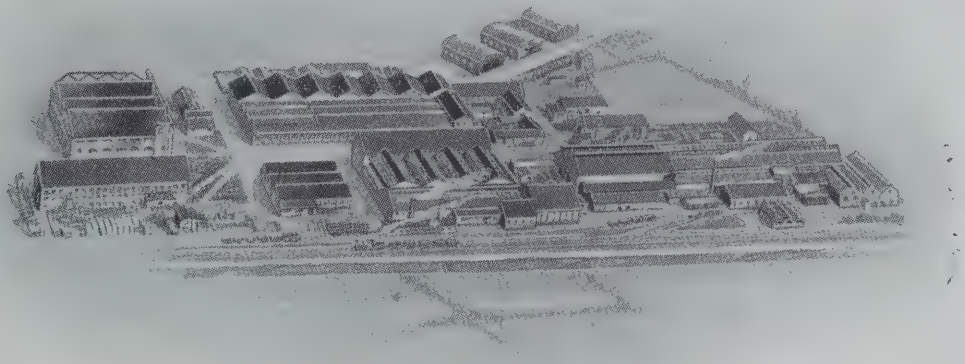
It will be as well for the writer to state that he has interests in the production of this or any other aeroplan but that he went to criticise and can do nothing but prais Of this machine he would say: "From such stuff are Pilo made."—A. C. F.

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A Runaway Balloon.

On Wednesday, Apr. 1, a 60,000 cub. ft. kite-balloon belonging to Mr. E. T. Willows, which was moored on the old balloon ground in the Crystal Palace, broke away from its moorings in the gale which later defeated and was defeated by the R.33. The balloon was moored by the nose, with 1,900 lbs. of sand-bags on the tail. It was moored in such a way that on breaking away two rip-panels were automatically ripped. So strong was the gale, however, that as soon as the balloon was free it shot into the air, carrying its 1,900 lbs. of sand-bags and passed out of the Crystal Palace grounds, and descended on a house called "Valletta," in Crystal Palace Park Road. Both the house and the balloon seriously deteriorated one another, and Mr. Willows had a heavy day's work in removing the balloon from the house.

For most of the night the wind had been blowing strongly along the terraces, but it was a plain, straightforward wind. About 04.00 hrs., however, it shifted round to the South-West and was reaching the balloon after passing over the main body of the Crystal Palace itself. This caused a curious turbulence, with the result that the wind, besides blowing direct on the nose of the balloon, was also sweeping over it in a huge billow and coming in from the back as well.

Mr. Willows had been up all night with the balloon, and was just contemplating ripping it when it broke away.

New Beardmore Aircraft.

The following is an extract from the "Beardmore News":—

The advance in aerial fighting machines in the six years since the Great War is well reflected in the design of a small batch of two-seater military biplanes, the order for which has been secured by the Beardmore Aviation Dept., Dalmuir, for a Continental Government.

Each machine has a top speed of 148 miles an hour, and can climb to 16,000 feet in 20 minutes with full load. Three machine-guns of the latest Beardmore-Farquhar type are carried, two for the pilot and one for the gunner, the latter carried on a special Scarff mounting, balanced to obviate the terrific force of the wind in the back seat. A special form of undercarriage, patented by the builders, and incorporating spiral springs in compression in conjunction with Ferodo-faced damping plungers, is employed.

Technically the structure is of interest in that it will be exceptionally difficult to cripple by machine-gun fire. No bracing wires whatever are used in any part of the machine. All controls are operated by direct-acting rods or torsion tubes, and no cables running over pulleys are employed. The tail, a semi-cantilever structure employing only one bracing tube, is thus particularly clear of obstructions, so as to allow a complete field of fire in this direction. Finally, the petrol is carried in tanks in the top plane, employing a simple gravity feed which is not easily put out of action, nor likely to go wrong. The engine is a Rolls-Royce Eagle IX.

Designs have also been completed for a single-seater fighter and a two-seater reconnaissance seaplane. The former is a strut-braced parasol monoplane, and is fitted with the Bristol "Jupiter" Mark V engine, incorporating the new variable timing gear for obtaining increased performance at high altitudes. The machines have a very high top speed, and a remarkable rate of climb. The seaplane is a low-winged monoplane with strut-bracing to floats and wings, and is fitted with a Rolls-Royce Eagle IX engine.

"Cerric" Cellulose Enamels.

During the past few months great strides have been made with the application of "Cerric" Cellulose Enamels for motor-car finishes with the result that the present finish obtained with these enamels is approximate to the high finish obtained with ordinary coach varnishes.

The advantages of Cellulose Enamels are now pretty well known to everybody, and in view of the season of the year doubtless numerous readers of The Aeroplane will be interested in the repainting of their cars.

The application of "Cerric" Cellulose Enamels must be carried out by spray, and therefore it can only be undertaken by firms suitably equipped, but Cellon (Richmond) Limited the manufacturers of "Cerric" will be pleased to put prospective users in touch with firms carrying out this work, a very convenient one for London readers being Messrs. H. J. Mulliner, of Bedford Park Works, Chiswick High Road, W. who have a well-equipped plant, and turn out very good work with these materials. All interested in the Aircraft Industry should specify "Cerric" to their coach-builders.

R.A.F. SPORTS.

Boxing,

The R.A.F. Individual Boxing Championships Competition was held at Uxbridge on Apr. 1 and 2. According to *The Stadium* the tournament was splendidly managed and the boxing quite up to the standard of previous years and full of interest.

The results were as follows:—

Officers' Events.

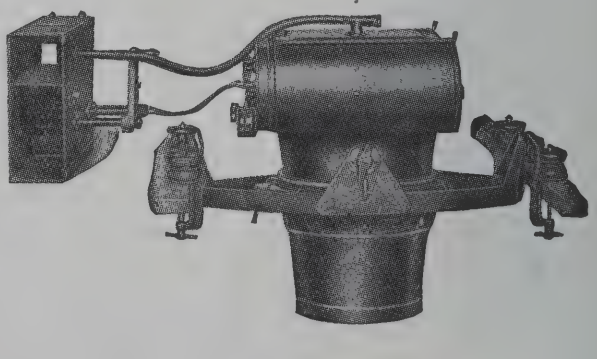
Feather-weight: Flt. Lt. G. V. Howard (Flowerdown) beat Flg. Off. C. B. Horsfield (Duxford) by a knock-out in the first round.

Light-weight: Flg. Off. Whitfield (Cranwell) beat Flt. Lt. Walker (Kenley), after a capital bout, on points.

Welter-weight: I. O'B. MacGregor (Old Sarum) beat Flg. Off. F. Larman (Manston). MacGregor, generally forcing matters, was a good winner at the finish on points.

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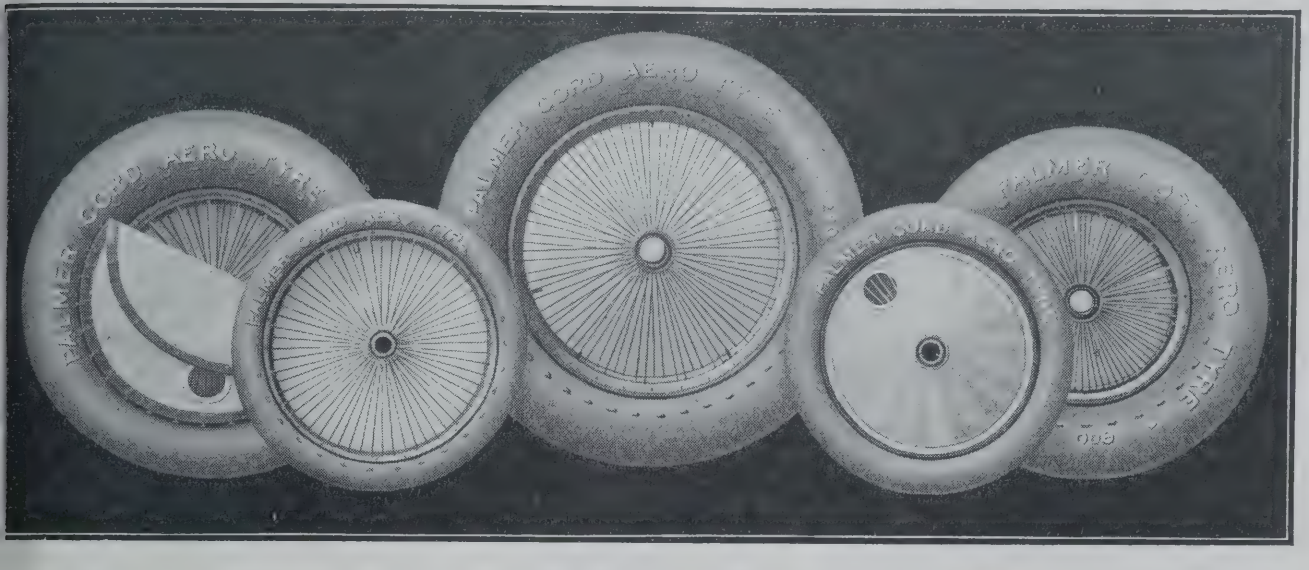


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		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	99	178.	38.89	132/46	1000×150	201	185.	60.32	125/60
300×60	16	111.12	25.4	Central	,,	112	150.	38.09	Central	,,	210	185.	60.32	Central
,,	17	72.39	12.7	Central	650×125	119	178.	55.	132/46	1000×180	148	220.	80.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	149	185.	55.	Central
,,	138	130.	38.09	Central	750×125	77	178.	44.45	132/46	,,	155	220.	66.67	Central
575×60	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	166	185.	55.	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	900×200	107	185.	55.	Central
,,	111	150.	38.09	104/46	,,	96	178.	55.	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	99	178.	38.89	132/46	,,	128	220.	66.67	Central
,,	34	150.	31.75	104/46	,,	112	150.	38.09	Central	,,	137	250.	80.	Central
,,	111	150.	38.09	104/46	800×150	82	185.	55.	135/50	,,	202	185.	60.32	Central
700×75	78	178.	44.45	132/46	,,	85	185.	55.	Central	1100×220	134	220.	66.67	Central
,,	79	178.	44.45	Central	,,	161*	185.	55.	135/50	,,	136	250.	80.	Central
,,	100	178.	38.09	132/46	,,	163*	185.	66.67	135/50					
,,	101	178.	31.75	132/46	,,	169†	185.	55.	135/50	1250×250	133	250.	80.	Central
00×100	77	178.	44.45	132/46	1000×150	211*	185.	60.32	135/50	,,	154	304.8	101.6	Central
,,	92	185.	55.	135/50	,,	131	220.	66.67	Central	1500×300	115	304.8	101.6	Central
,,	95	185.	55.	Central	,,	150	185.	55.	Central	,,	126	304.8	152.4	Central
,,	96	178.	55.	132/46	,,	167	185.	55.	125/60	1750×300	139	400.	152.4	Central
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IK (240)

Middle-weight (First Series): Flg. Off. G. A. Cavis-Brown (H.M.S. *Furious*) knocked out Flg. Off. K. H. Holley (Netheravon) with a right cross in the second round. Byes: Plt. Off. G. C. Sclater (Halton), Flg. Off. T. J. Shaw (Uxbridge), and Flg. Off. E. G. Whinney (Duxford). (Semi-finals): Cavis-Brown beat Sclater on points. Whinnney beat Shaw on points.—The title-holder took the points of every round.

(Final): Flg. Off. E. G. Whinney (Duxford) beat Flg. Off. G. A. Cavis-Brown (Gosport) on points This was always a very near thing, and a rousing contest ran to an extra round before Whinney gained the verdict.

Light-heavy-weights (Semi-finals): Flg. Off. A. S. Adams (Northolt) beat Flg. Off. G. S. Grace (Halton) on points. Plt. Off. Talbot-Price (Digby) beat Plt. Off. J. A. Ballantyne (Digby) in the second round.

(Final): Plt. Off. L. F. T. Price (Digby) beat Flg. Off. A. J. Adams (Northolt) in the first round.

Heavy-weights (Semi-final): Flg. Off. P. G. Chichester (Manston) beat Flg. Off. C. W. A. Scott (Henlow), who, although dropped three times with right hooks, objected to the referee's intervention in the second round. Bye: Plt. Off. H. Ford (Eastchurch).

(Final): Plt. Off. P. G. Chichester (Manston) beat Flg. Off. H. Ford (Eastchurch).

AIRMEN'S EVENTS.

Fly-weight (First Series): AC.1. W. H. Izzard (Upavon) beat AC.2. S. Reynolds (Hawkinge). The former won this championship in 1922, and his treatment of Reynolds was so drastic that in pity the referee intervened in the second session. Byes: L-AC. Williams (Henlow), AC. McKendry (Netheravon), and AC. Gooch (Cranwell). (Semi-finals): Williamson beat Izzard on points. Gooch knocked out McKendry with a right to the mark in the third round.

(Final): L-AC. Williamson beat AC. Gooch in the first round with rights and lefts to the body.

Bantam-weight (First Series): AC.1. J. Bridge (Netheravon) beat A.C.1. J. Black (Duxford) on points. AC.1. J. Codling (Manston) beat Cpl. W. J. Alexandra (Halton) in an extra round.

(Second Series): Bridge w.o., Codling absent. McLachlan beat Harrington in the second round.

(Final): W.O. Bridge beat Cpl. McLachlan on points. Bridge boxed cleverly, and, scoring freely with his left, was a good winner.

Feather-weight (First Series): AC.2. R. Gideon (Sealand) beat L-AC. P. T. Mecchan (Manston) on points in as good a bout as we are likely to see at this meeting, and after which Mecchan was deservedly awarded 7 good loser's points. AC.1. W. Farrow (Netheravon) beat AC.1. W. E. James (Netheravon). L-AC. C. Wyatt (Cranwell) beat AC.1. A. Warren (Duxford). Byes: L-AC. Lambert (Duxford), L-AC. W. Morriss (Larkhill), L-AC. C. Blaze (Kenley), AC.1. J. Jackson (Henlow), AC.1. W. H. Davies (Halton).

(Second Series): Gideon beat Farrow on points. Lambert beat Wyatt on points. Blaze beat Morriss. Jackson beat Davies.

(Semi-final): L-AC. J. Lambert (Duxford) beat AC.2. Gideon (Sealand) in the second round; AC.1. J. Jackson beat L-AC. C. Blaze (Kenley) on points. (Final): Lambert beat Jackson on points.

Light-weight (First Series): L-AC. Preston (Manston) beat AC.1. Dent (Northolt) on points. AC.1. H. J. Roberts (Duxford) beat Sjt. T. Thompson (Cranwell). L-AC. H. Patterson (Upavon) beat Cpl. E. J. Bowes (Cranwell). Byes: AC.1. J. J. Cook (Larkhill), AC.1. J. D. Johnstone (Lee-on-Solent), AC.1. E. Docherty (Worthydown), AC. S. Mack (Henlow), and Sjt. J. R. Stone (Farnborough).

(Second Series): Roberts w.o., Preston absent. Cook beat Patterson on points, but both were complimented by the referee on their fine performance. Docherty beat Johnstone. Stone beat Mack.

(Semi-final): AC.1. J. Roberts (Duxford) beat AC.1. J. J. Cook (Larkhill). Sjt. J. R. Stone (Farnborough) beat AC.1. E. Docherty (Worthydown) on points.

(Final): Stone beat Roberts on points. Sjt. Stone has held the Light-weight Championship of the R.A.F. since 1919.

Welter-weight (First Series): L-AC. L. J. Bills (Manston) knocked out AC.2. J. Willow (Manston). L-AC. D. Rolph (Sealand) beat AC.2. W. White (Hawkinge) on points. AC.2. R. H Tynne (Calshot) beat L-AC. T. Turner (Hawkinge). L-AC. J. Brady (Worthydown) beat AC.1. J. McCann (Duxford). Marshall knocked out Walker in the first round.

(Semi-finals): L-AC. L. J. Bill (Manston) beat L-AC. Rolph (Sealand) on points; L-AC. J. Brady (Worthydown) beat AC.2. N. H. Thynne (Calshot) on points. (Final): Bell beat Brady on points.

Middle-weight (First Series): AC.2. Rolleson (Halton) beat L-AC. A. Rudkin (Halton) L-AC. M. Prestney (Eastchurch) beat Cpl. E. W. Carter (Cranwell) on points. Byes: AC.1. Green (Sealand), AC.2. Smith (Netheravon), AC.1. F. W. House (Manston), AC.1. T. C. Lewis (Larkhill), L-AC. L. Walker (Kenley), and AC.1. T. Marshall (Felixstowe).

(Second Series): Rolleson w.o., Prestney absent. Green knocked out Smith in the second round. House beat Lewis in the second round, the referee intervening.

(Semi-final): AC. Rolleson (Halton) beat AC.1. Green (Sealand) on points; AC.1. F. W. House (Manston) beat AC.1. T. Marshall (Felixstowe) on points.

(Final): Rolleson beat House on points. This was a fine bout, and it was only after an extra round that it was decided in favour of Rolleson.

Light-heavy-weight (First Series): AC.1. R. Robinson (Leuchars) knocked out L-AC. A. Grain (Hawkinge). Cpl. E. Gallimore (Calshot) knocked out L-AC. A. M. Miller (Henlow). Byes: AC.1. W. E. Williams (Halton) and L-AC. H. C. Wiseman (Hawkinge).

(Semi-final): Williams knocked out Wiseman. Gallimore knocked out Robinson.

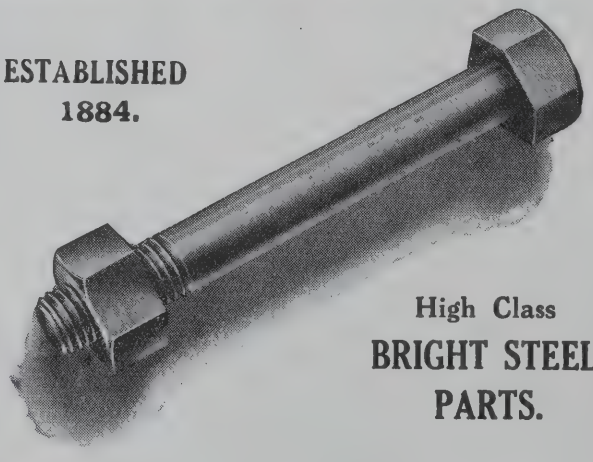
(Final): W. E. Williams beat Cpl. E. Gallimore, knocking him out in the second round with a swing to the jaw.

Heavy-weight (First Series): AC.2. A. Donovan (Halton) beat Cpl. W. Barrett (Halton). Byes: AC.1. F. Steele (Henlow), Sjt. E. Thompson (Cranwell), and AC.1. Ruddes (Manston).

(Semi-finals): Steele beat Donovan, the referee intervening in the third round. Rudder w.o., Thompson absent.

(Final): F. Steele beat AC.1. Rudder with a right to the jaw in the second round.

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The R.Ae.C. Racing Fund.

The following donations have been received for the Racing Fund of the Royal Aero Club :—

Sir Charles Wakefield, Bart., £500; Mr. A. S. Butler, £100; the Maharajah of Jaipur, £100; Lieut.-Col. A. Ogilvie, C.B.E., £25; Mr. J. H. Spottiswoode, £12 12s.; Sir Basil Zaharoff, G.B.E., G.C.B., £10 10s.; Capt. C. B. Wilson, £5 5s.; Mr. A. R. Dresser, £1 1s.; Mr. Geoffrey Dorman, £1 1s.

PERSONAL NOTICES.

DEATHS.

MASON.—On Apr. 8, at Leysdown, Kent, as the result of a flying accident, Anthony Cecil Carbery Mason, Plt. Off., R.A.F.

Mr. Mason was gazetted Plt. Off., R.A.F., on Nov. 10, 1923, and posted to No. 1 F.T.S., Netheravon. In June, 1924, he was posted to No. 41 (Fighter) Sqdn. for a course of instruction.

MILLS.—On Apr. 8, off Birchington, as the result of a flying accident, AC.1. Ernest Edward Mills, R.A.F.

THOMSON.—On Apr. 17, at Shaibah, Iraq, as the result of a flying accident, Thomas Thomson, Flg. Off., No. 84 (Bombing) Sqdn., R.A.F.

Mr. Thomson was a Flying Officer (Technical) in 1919, and in May, 1920, was posted to H.Q. Cranwell for Stores Duties. On Nov. 27, 1924, he was posted to No. 84 Sqdn. Shaibah for Stores Duties.

WALKER.—On Apr. 8, off Birchington, as the result of a flying accident, Neil Coull Walker, Plt. Off., R.A.F. Mr. Walker passed out of the R.A.F. Cadet College on Mar. 17, 1925.

MARRIAGES.

AITKEN—TWEEDIE. On Apr. 6, at St. Paul's Cathedral, Malta, by the Rev. Canon A. C. Moreton, Flt. Lt. R. Stanley Aitken, M.C., A.F.C., R.A.F., only son of Mr. and Mrs. Robert Aitken, lately of Stanmore, Middlesex, to Ena, only daughter of the Rev. and Mrs. D. Jackson Tweedie, of The Manse, Stichill, Roxburghshire.

BRODIE—COATES.—The marriage of Flt. Lt. Ian E. Brodie (late R.N.), only son of Mr. and Mrs. W. A. Brodie, of La Cima, San Remo, and Heathside, Totland Bay, with Mary Gonville, youngest daughter of the late Mr. and Mrs. William Coristine Coates, of Knockanally, co. Kildare, and niece of Mrs. Brodie, J.P., of Fernhill, Wootton Bridge, took place at St. Edmund's, Wootton, Isle of Wight, on Apr. 16.

WORMELL—HANBURY.—The marriage between Eric Wormell, Flg. Off., R.A.F., youngest son of Mr. W. J. Wormell, J.P., and Mrs. Wormell, of Eaton Road, Coventry, and Marcia, second daughter of Mrs. E. C. Hanbury, of Hove, took place on Apr. 21 at Outwood Parish Church, Surrey.

BIRTHS.

FANE.—On Apr. 18, at Stondon Cottage, Brentwood, the wife of Capt. Gerard Fane, D.S.C. (late R.A.F.)—a son.

MOODY.—On Apr. 6, at Peshawar, India, to "Bobbie," wife of Flt. Lt. H. M. Moody, M.C., R.A.F.—a son.

The Three Hy-dro-car-bons

A Serial Story—Chapter IV



NAPH-THENE IS A REFINED AND ATHLETIC GENTLEMAN

IT may interest you to know the characteristics of Par-af-fin, A-ro-mat-ic, and Naph-thene.

Par-af-fin is the villain of the piece. He causes all the noisy "pinking" in your motor car. Naturally Shell Spirit will have as little to do with him as possible. He's not entirely a bad chap, as he does not mind the cold, and so makes it easy to start your car.

A-ro-mat-ic is a dainty little lady. She detests noise, and the more you have of her the less "pinking" you get, and the easier it is to climb hills.

Naph-thene is a refined and athletic gentleman, as you can clearly see from his photograph. Like A-ro-mat-ic, he doesn't like noise—though he doesn't mind it as much as A-ro-mat-ic.

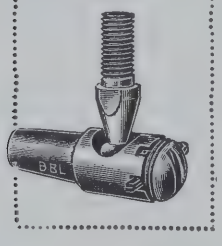
And so Shell Spirit is a carefully Balanced Blend of A-ro-mat-ic and Naph-thene with only a little Par-af-fin. Hence the clean valves and the easy starting, and the freedom from "pinking."

By careful following this short "serial" story, motorists who have long been aware of Shell superiority may now know the real reason of its predominance.

(Watch for Chapter V)

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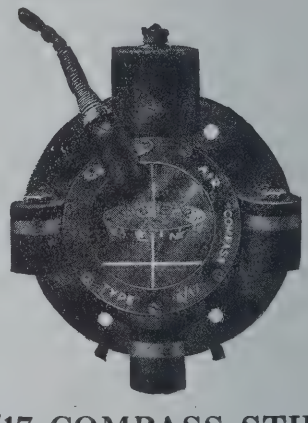
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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXVIII. No. 17. SIXPENCE WEEKLY. Registered at the G.P.O. as a Newspaper

TURRETS, BATTLEMENTS & TOWERS.



A STATELY HOME:—A fine view of Penrhyn Castle in North Wales photographed by the Surrey Flying Services.

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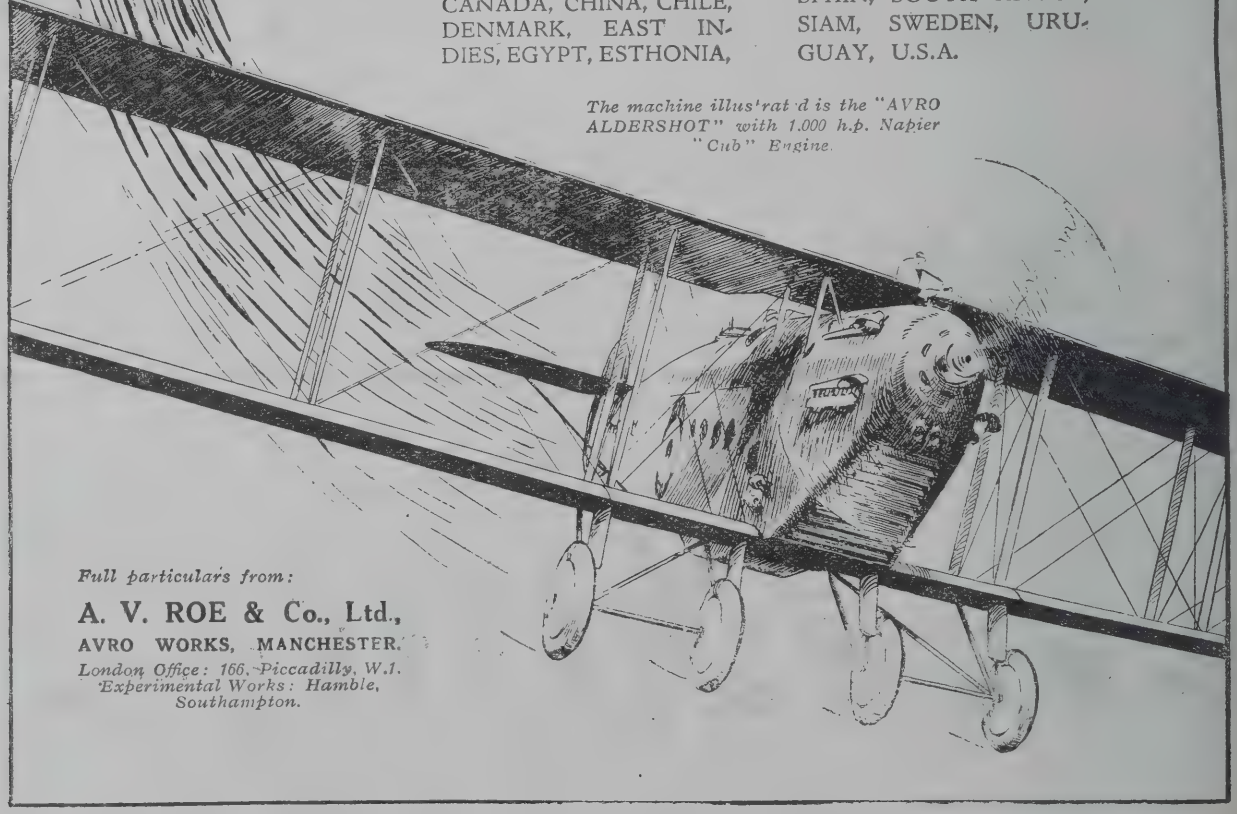
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APRIL 29, 1925.

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Incorporating

Aeronautical Engineering

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U.S.A., 1 Year, $8 50c.

ON ADVERTISING AIRCRAFT.

From various quarters and through diverse but reliable annels one has been told that officials of certain firms in e British Aircraft Industry have felt themselves so much grieved at certain remarks in this paper on the subject of eronautical Engineering in general that an attempt has been ade by the representatives of those firms to induce other ms in the Aircraft Industry to withdraw their advertise-ents from THE AEROPLANE newspaper.

It is of course common knowledge that practically all news-pers, and more especially trade papers, exist on their ad-rtisement revenue and not on their sales to the public. nerefore if every firm in the Aircraft Industry were in-ced to withdraw its advertisements from THE AEROPLANE the expiry of existing contracts, the result would be that HE AEROPLANE would go out of existence, and the British air-aft firms would be left with one paper to fight their politi-l battles and to push their interests abroad instead of o.

This might result in the reduction of advertising expendi-re to some small extent until the paper which was left with monoply realised that it could double the price of its ad-rtisement space. But it is always well to remember that mpetition is good for trade and that, as one has remarked a previous article, it is better to have opinions expressed casionally in a way which may be misunderstood, or even have unpopular opinions expressed, than not to have inions expressed at all.

As a matter of fact one has not much fear of all the firms the Aircraft Industry withdrawing their support from THE ROPLANE. For one has a number of good friends in the dustry who realise that in its fourteen years (almost) of istence, THE AEROPLANE has fought unremittingly and suc-ssfully for the good of the Flying Services, and that the ancial success of the Trade has depended and must always pend primarily on the importance of the Flying Services nether as the Royal Air Force alone and undivided, or as e R.A.F. plus a Naval Air Service plus an Army Flying rps.

THE R.A.F. AND THE AEROPLANE.

THE AEROPLANE has long been recognised as the organ of e Flying Services. True it has represented our Service iators unofficially but one can at any rate claim that it s represented them faithfully. And the whole history of rvice aviation shows that whatever has been advocated riously in THE AEROPLANE has inevitably come to pass.

From the days when one fought against the oppression and pression of the Trade by the Royal Aircraft Factory at rnborough, and succeeded in securing a free hand for ide designers, down to the present moment, when after a ng fight parachutes of the proper type are being adopted the R.A.F., those changes of policy which have been advo-ted by THE AEROPLANE have come to pass.

One does not claim for the staff of this paper any intellectual e-eminence. Its success in these matters has been simply e to the fact that the whole of the interests of the staff the paper have been wrapped up in the R.A.F. and conse-ently every member of the staff is instinctively on the ok-out for those matters which concern the welfare of our rvice aviators. And the reward for absolute sincerity in ch work, and for faith in the justice of a cause, is inspira-n to do and say the right thing at the right moment.

There have been, and presumably there always will be, nes at which writers in this paper have allowed their keen-ss for the welfare of the R.A.F. to blind that corner of an e which every writer in every trade paper should in his her own interests keep carefully focussed on the ad-rtisement pages. Personally one is particularly prone to s form of offence in spite of the fact that as a director of firm which owns THE AEROPLANE one should perhaps be re careful about the paper's financial interests.

At the same time one believes that those members of the ade who think seriously on the subject would rather that E AEROPLANE thought first of the R.A.F. than about its vertisement pages. Nevertheless business firms must turally look on their advertising purely as a commercial proposition and therefore perhaps one may be forgiven for saying a few words on THE AEROPLANE as an advertising medium.

THE ETHICS OF ADVERTISING.

There are perhaps those in the aircraft trade who regard THE AEROPLANE purely as a Trade paper and expect it to devote itself first and foremost to pushing the products of the firms by whose advertising admittedly it is kept alive. That is certainly the custom of many trade papers. But one would point out to such people that as the organ of the Royal Air Force and of practical aviators in general THE AEROPLANE is something more than a trade paper and should be regarded by advertisers much more as they would regard a daily newspaper.

The fact that *The Daily News* and *The Daily Chronicle* are devoted body and soul to the cause of Free Trade does not prevent British manufacturing firms who would benefit by a high protective import duty from advertising in those papers. Nor does the protectionist policy of *The Morning Post* prevent importers of foreign motor-cars from advertising therein. The value of a paper as an advertising medium should be considered in relation to its readers and not in relation to its policy.

No doubt the reply of some people to this argument will be that the Aircraft Trade has practically only one customer, namely, the Air Ministry. This argument will of course be used regardless of the fact that the instigators of the present attack on THE AEROPLANE are using as their chief weapon the argument that the remarks at which they have taken offence may possibly affect their business in foreign countries.

Therefore one would point out that in advertising aircraft and aeronautical material for the Royal Air Force the R.A.F. should be considered not as a single buying department but as a specialised section of the buying public.

THE R.A.F. AS BUYERS.

There are 3,000 officers and 30,000 men in the R.A.F., and though no one of them is a direct purchaser of an aeroplane or a machine-gun, for example, it is the mass opinion of all of them which ultimately decides what is to be bought and what is not to be bought. It should be the aim of every advertiser to create a feeling in favour of his products among the whole personnel of the R.A.F.

Let us take a case in point. Supposing a certain firm wanted to sell a new make of sparking plug to the R.A.F. By skilful and assiduous advertising that firm could induce pilots and mechanics to ask at their squadron stores whether plugs of that type might be issued for trial. Squadron stores represent exactly in the scheme of the R.A.F. the retail shop in ordinary civilian business life.

When the squadron stores had been asked often enough for that particular make of plug the stores officer, who corresponds to the retail shop-keeper, would ask the aircraft park, from which he draws his supplies, which corresponds to the wholesale store or factor of commerce, to let him have specimens for test.

When the aircraft park had been asked often enough by a sufficient number of squadron stores for such plugs, it would then indent to its area depot for samples for those squadrons. Thus the area depot corresponds to the big wholesale dealers who supply the small wholesale dealers.

And ultimately the area depots would indent to the Supply Department at the Air Ministry, which in its turn corresponds to the big wholesale dealer who buys and sells without ever seeing the goods other than samples.

Thus one sees that in the R.A.F. there is precisely the same chain of demand and supply which exists in ordinary commercial life and that by judicious advertising the Air Ministry can be induced indirectly to buy certain products just as the big wholesale dealers in the city can be induced to deal in certain soaps or sausages or any other commercial products.

PSYCHOLOGICAL EFFECT.

There is also the psychological effect of advertising to be considered. Everybody who has had dealings with the R.A.F. knows how rumours get about concerning the reliability or unreliability of certain aeroplanes or certain en-

gines or certain magnetos or carburettors or what not. Certain things become the fashion and everybody is all in favour of them. Certain other things become unpopular and the unpopularity spreads from the squadrons right up to the high authorities in the Air Ministry.

Good advertising is just as much concerned with creating a good-will for the advertiser's products as it is with actually creating a desire for purchase. It is just as important to maintain a friendly feeling in the Air Force towards a firm's products after those products are in use as it is to create a desire to have those products before they are bought. If such a feeling has been created it is not easily destroyed.

If such a feeling does not exist and a clumsy or careless or stupid pilot has a crash and blames it onto some particular machine or engine or part his story of the accident may do quite considerable harm to the manufacturer whose product is blamed. But if the feeling does exist then the probability is that nobody cares for the pilot's opinion. Therefore advertising to maintain good-will is just as important as advertising to create good-will.

Moreover, the Trade will do well to remember that The Aeroplane is read with close attention by the Service and Civil Aviation authorities in all foreign countries and that for such a reason alone this paper should be considered simply as an ordinary advertising proposition. It is absurd to imagine that the good-will which The Aeroplane has created abroad for British aircraft can be destroyed by one small paragraph in an article on a purely Service subject.

Until quite recent years, in which British advertising has been undertaken by people who really understand the psychology of advertising, the quality of American advertising has always been regarded as the last word in that line of business. And on many occasions one has seen American firms' advertisements deliberately designed to defeat or counteract editorial comments which might otherwise create an unfavourable impression of their goods. The American theory has been that if a firm withdraws its advertisements because its products are unfavourably criticised it is thereby admitting its own weakness. In other words the cap has fitted and it has worn it.

Also one seems to remember that not very long ago a certain newspaper heartily damned a certain play in London, whereupon the producers of the play proceeded to advertise largely in that paper the opinions of other critics which were hostile to the paper's own critic. The result was that the play had quite considerable success. That certainly strikes one as being a cleverer method of improving business than merely withdrawing the advertisements of the play because the critic was hostile.

The Facts of the Case.

In the particular paragraph which seems to have given so much offence, The Aeroplane did not criticise the products of any individual firm nor did it even criticise the British Aircraft Trade in particular, one was merely writing about aeronautical engineering as a whole. Therefore one may perhaps be excused for stating once more one's opinion that so far as the science of aeronautical engineering goes British aeronautical engineers are on the average far ahead of those of other countries.

It is true that certain other countries hold records which we do not hold. But, as one has said over and over again in this paper, for years before the instigators of the present attack on The Aeroplane conceived the idea of adopting an offensive attitude and in fact before some of these instigators ever took any interest in aircraft, one is perfectly sure that given a free hand with their designs, and the necessary money, there are designers in this country who could produce engines and aeroplanes which would capture the World's air records. And surely one cannot make a more definite statement than that as to the superiority of British aeronautical products.

Seeing how consistently in the past fourteen years The Aeroplane has fought for the Royal Air Force and for the Aircraft Industry, and seeing that it has given a lead on all phases of air policy which has been followed consistently by the non-technical press, and seeing how uncompromisingly this paper has upheld the superiority of British aircraft construction, one knows that the British Aircraft Industry as a whole is well satisfied with The Aeroplane. But one is perfectly aware that there are certain people in the Trade who have a personal animus against oneself.

One has always believed in making enemies, as will be remembered by those who followed the policy of this paper in the early days of the War when with the help of various people outside the immediate aeronautical circle The Aeroplane broke not only the War Office policy against the Trade but also the persons who were responsible for that policy. Therefore one is in no way afraid of those enemies who are endeavouring to undermine The Aeroplane's influence with the British Aircraft Industry and with the Air Ministry.

Happily one has besides enemies a number of very good friends in the Aircraft Industry, in all the various ranks and grades of the Trade, and one knows that one can rely on the support of such friends when attacks are made on this paper. At the same time there are others who are strictly neutral or are liable to be led by those who wish ill to this paper. To them one would merely suggest that before taking much notice of the arguments which are advanced they should endeavour to discover how much of the arguments are soundly commercial and how much of them are purely personal animosity.

Moreover, one would suggest to the directors of those firms in the Aircraft Industry whom the instigators of this attack on The Aeroplane have endeavoured to persuade to withdraw their advertising that they should consider whether, if the Trade is so gravely concerned about one short paragraph in The Aeroplane, and if the effect of such a paragraph is so great abroad as is suggested by those in this country who are hostile to The Aeroplane, there can be a worse policy than for any firm to cease advertising in The Aeroplane.

The Aeroplane can most certainly claim to have a good deal of influence abroad, as is proved every day by the number of inquiries which come to this office about aircraft and aircraft material, ranging all the way from a letter from a firm in Siam which supplies material to the Siamese Air Force to one from a firm in Germany wanting information about oxygen apparatus and stating that they had been advised to inquire from The Aeroplane by the British section of the Allies Aeronautical Commission in Germany.

A Statement of Policy.

However, whether British firms advertise or not will never make the slightest difference to the saying of nice things about good British aeroplanes or criticising adversely what are considered by competent people to be either bad British aeroplanes or British aeroplanes which are not up to British standards.

Manufacturers should remember that after setting such a high standard with certain British aeroplanes a machine which would pass muster as being ordinarily good when turned out by a mediocre manufacturer cannot be praised as a first-class machine unless it is up to British standard.

So far as advertising in The Aeroplane is concerned, a firm can either utilise its space to emphasise well-earned praise which has appeared in The Aeroplane by reiteration it week after week, as certain firms have done after certain World-famous performances by their machines or engines or they can use it to counteract adverse criticism by advertising what they consider to be the good points of a machine which has been adversely criticised. But whichever they do it is not going to make the slightest difference to the critical faculties of the technical staff of The Aeroplane as long as this paper continues to exist.

At any rate one can assure the Royal Air Force and the British Aircraft Industry that The Aeroplane will do its best to help assure the safety of the officers and men of the Royal Air Force and the success of the British Industry. But in doing so it will endeavour to be as honest as it is possible for a newspaper to be, keeping in view the law of libel and the state of its advertisement pages. And irrespective of those considerations, it will not prostitute its pages to boosting editorially any aeronautical product British or otherwise, which have not proved their excellence.

The staff of The Aeroplane have always taken the long view that it is better in the end to be truthful than merely popular. And the whole history of The Aeroplane never paper has shown that in the end the policy of the paper has worked out for the best in furthering the progress of British Aviation.—C. G. G.

An Italian Development.

It is reported that, as the result of the Report of a Commission that has been considering the Italian Armed Forces the Regia Aeronautica, which is the Italian Royal Air Force is to be converted into an autonomous unit

Although the official statement does not implicitly say so it is generally understood that this decision will be followed by the creation of an Air Ministry on terms of equality with the Ministry of War and the Admiralty.

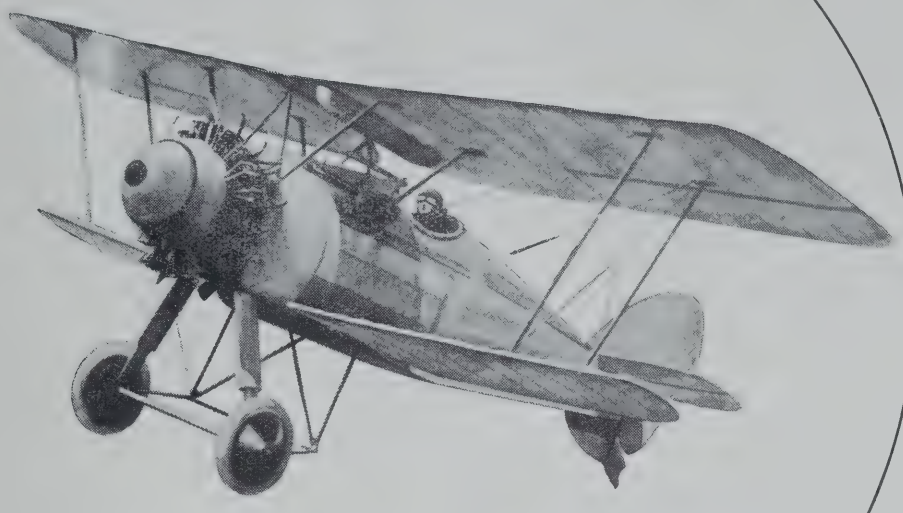
Hitherto the Regia Aeronautica has been run by the Commissariato per l'Aeronautica, which was directly under Signor Mussolini, the Prime Minister. The first head of the department was S. E. Finzi.

A New Japanese Aircraft Carrier.

On Apr. 23, the new Japanese aircraft-carrier *Akagi* was launched at Kure.

It will be remembered that the *Akagi* was designed as a battle-cruiser, but, as the result of the Washinton Treaty, has been converted into an aircraft-carrier. A sister ship, the *Amagi*, which was undergoing the same treatment, was destroyed in the earthquake of 1923.

The *Akagi* will have a displacement of 26,900 tons, a speed of 28¼ knots, and will carry 50 aircraft



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ARMSTRONG WHITWORTH
AIRCRAFT LIMITED

(Allied with Sir W. G. Armstrong Whitworth & Co., Ltd.)

Designers & Constructors of all Types of Aircraft

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED.
(Allied with Sir W. G. Armstrong Whitworth & Co., Ltd.),
WORKS AND AERODROME: WHITLEY, Near COVENTRY.
LONDON: 10, OLD BOND STREET, W.1

ARMSTRONG WHITWORTH AIRCRAFT

THE YELLOW ALLIANCE.

With admirable psychology, Mr. F. Britten Austin in an article in the current issue of *The Empire Review*, on the Treaty between Japan and the Soviet, has omitted the use of the world menace. One has only to prove to the average Englishman that a certain sequence of events in other countries have led to a situation which is a menace to the security of this country and the Englishman will, figuratively speaking, yawn in one's face. Mr. Britten Austin does not risk this. He merely draws attention to a number of facts which are undeniable.

The treaty between Japan and the Russian Soviet which had hung fire for three years was signed on the 21st of last January. The text of the Treaty (with the so-called secret clauses) was published and commented on at length in a leading article in THE AEROPLANE on Mar 4. Mr. Austin's article shows the far-reaching effects possible to this Treaty. He points out that on the face of it Russia scores. She gets diplomatic recognition, an indefinite postponement of the debt question, and possession of Northern Sakhalin.

Mr. Austin also points out that it has not previously been the political practice of Japan to give something for nothing. Also there is not one word about China in the Treaty in spite of the fact that Japan has had a tremendous footing in China ever since the recent Chinese Civil War. This gives a certain probability to the secret clauses which were published in the Berlin *Lokalanzeiger*. According to this paper the Treaty was actually a tripartite treaty between Russia, Japan and China.

Mr. Austin reminds his readers that for fifty years Japan has aimed at acquiring control over China; not as a territory to which the surplus population of Japan can emigrate but rather as a stepping stone to bigger things. Japan must increase her territory to meet the needs of her enormous population and China is already over-populated. The Pacific slope of America can never be part of the Japanese Empire so long as the American Fleet exists. There remain the great islands to the Southward and eventually Australia. Mr. Austin is confident that any Japanese movement in this direction would inevitably provoke war in which both Great Britain and the United States would necessarily be involved.

He says that these two countries are not such a formidable combination as at first appears. Until the Singapore Base is completed neither Power possesses a first-class Naval base in the Western Pacific. Japan is, thanks to her geographical position, aided by scientifically sited Naval bases and fortresses. The Sea of Japan, which is her strategic centre, is invulnerable to anything but raiding aircraft. The narrow straits cannot be entered by hostile ships. Against that, Japan is deficient in coal, oil, and steel-producing iron-ores. Every sea route would be denied her. Therefore she must, and by this Treaty has, secured for her use an overland route to Europe.

Mr. Austin is of the opinion that the Trans-Siberian Railway is still approximately of the same value as it was during the Russo-Japanese War when Russia maintained her vast armies in Manchuria by its means.

He goes on to explain what Russia stands to gain by such a war. He asserts that Russia has become an Asiatic Power and that the whole object of the Bolshevik Government is the subversion of white civilisation. And the Soviet obviously wants to be in at the death where the prestige of the two great English-speaking Powers is concerned.

Very little is known about the strength of the Red Army but it is known that the percentage of machine-gun strength is very high indeed. He quotes from an article in a German aviation journal which states that extraordinarily active propaganda are being carried on by the Soviet Government for the creation of their Air Fleet. The propagandists have succeeded in obtaining the support of the Communist masses.

He considers that when the Red Army takes the field it will be very formidable indeed. He does not consider that it will be employed in Asia in support of Japanese military activities but that it will act rather in the rôle of general trouble-maker in Europe. He foresees an attack on Poland.

He also thinks that one of the main tasks of Russia would be to stir up trouble in India. The Soviet Government might cause the Indian Government serious embarrassment on the frontier. He considers that the subsidiary Soviet Central Asian Republics on the borders of China, India, Afghanistan and Persia have been deliberately reconstituted with the intention of developing such trouble, which is a continuation of the old Tsarist policy.

A considerable war in Major L. V. S. Blacker's happy hunting ground is certainly one of the potentialities in the situation created by the Russian Soviet Treaty.

An outline of the possible actions of the British and American Fleets, which outline can be filled in or amended by any student of war, is the last part of the article.

One cannot help agreeing with Mr. Austin in his final summing-up of the situation in which he says that this new accord between Japan and Soviet Russia is incomparably the most significant diplomatic deal since the Washington Four-Power Pact and that its significance is world-wide. Most of his statements will be familiar to readers of THE AEROPLANE, but there is interest in finding that a writer of world-wide reputation, who has made the strategy of the Pacific his special subject, should agree so closely with views which many readers have regarded as chimerical.—C. M. McA.

A Long Distance Squadron Flight.

On Feb. 28 twelve Curtiss P.W.8s (400 h.p. Curtiss D 12 engines) belonging to the 1st Pursuit Group U.S. Air Service, and under the command of Major Lamphier left Selfridge Field, Mount Clemens, Mich., at dawn to fly to Miami, Fla.

After 1 hr. 30 mins. they landed at Wilbur Wright Field, Fairfield, Ohio. In landing one machine deteriorated itself by running into a sunken road and a new machine was substituted for it.

At 10.55 hours the squadron left for Macon, Georgia, where it landed at 16.00 hours, after flying over mountainous and wooded country with very few distinguishing landmarks and country over which none of the pilots had ever flown. Owing to the fact that bad weather was reported ahead and that the country to Miami was unknown to all except the squadron-commander, the order was given to wait until Monday, Mar. 2, before resuming the flight.

On Monday the squadron left Macon at 09.30 hours and flew for 3½ hours through thick clouds and heavy tropical rain. Miami was then sighted, and after manœuvring over the city a landing was made on Hialeah Field, Miami, near or on the property of Mr. Glenn Curtiss.

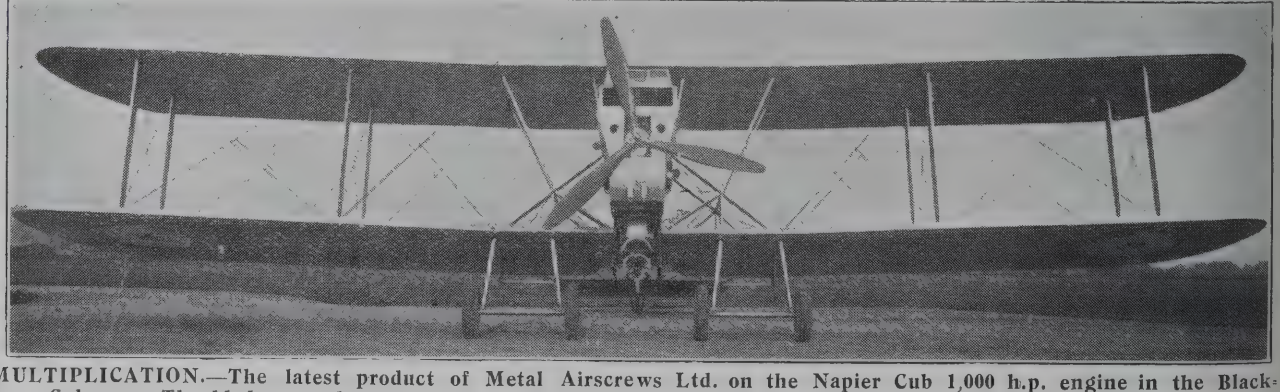
On Mar. 4 the squadron took off at 12.00 hours and flew for four hours, landing at Augusta, Ga. At 13.00 hours on March 5th the squadron left for Langley Field, Va., and were forced down by rain and low clouds to just over the tree-tops. They landed at 17.00 hours.

On Mar. 6 the squadron took part in an aerial demonstration for members of Congress and visiting Army and Navy officers from Washington.

On Mar. 7 the squadron left for Bolling Field, and after resting over Sunday left for Selfridge Field on Mar. 9, again meeting with bad weather.

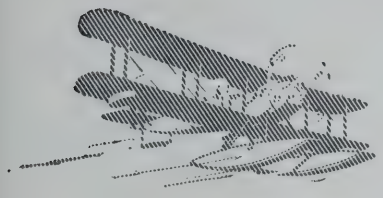
The 12 machines completed the flight, a total distance of 2,840 miles, which was covered in 21 hours 55 mins. flying time, an average of 130 m.p.hr., the cruising speed being about the same as the top speed of R.A.F. single-seaters.

A further flight will be carried out in the late spring, when an attempt will be made to reach Miami between dawn and dusk.



MULTIPLICATION.—The latest product of Metal Airscrews Ltd. on the Napier Cub 1,000 h.p. engine in the Blackburn Cubaroo. The blades are three of the same type as are used two at a time for the 700 h.p. Rolls-Royce Condor.

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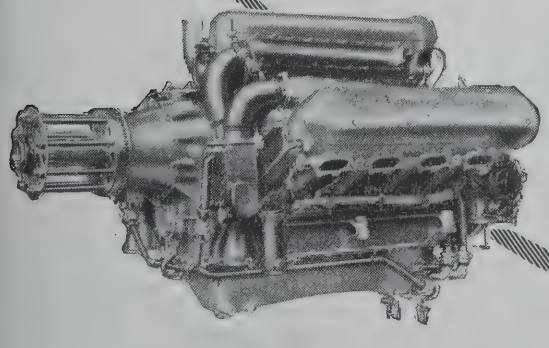
Every part has to pass not only physical and chemical tests, but also the careful scrutiny of Government experts.

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THE ROYAL AIR FORCE.

The London Gazette.

Apr. 21.

General Duties Branch.—The following are granted S.S. comns. as Plt. Offs. on probation, with effect from, and with seniority of, Mar. 31:—H. R. Bardon, M. Brunton, P. Clavell-Blount, E. L. Cowan, I. E. C. Dale, D. de Robeck, A. R. Dunlop, W. J. R. Early, F. W. Field, S. A. B. Harries, F. H. Hannaford, W. J. Kelly, G. J. C. Mahony, R. Matheson, H. Peck, T. H. Perry-Keene, T. H. Rowlands, V. C. Taylor, R. R. Turner, W. G. W. Fahey, H. A. M. Weir.

Lt. Cdr. A. A. L. Miller, R.N., is granted a temp. comn. as a Sq. Ldr. on being lent for two years' duty with the R.A.F. (Mar. 31).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—T. W. G. Cattell (Dec. 15, 1924); J. W. New (Jan. 14); Y. W. Burnett, J. S. Dick (Feb. 9); H. M. S. Wright, R. Barrett, P. R. Stroud (Feb. 16); R. Melbourne (Mar. 15).

Flt. Lt. C. R. Richardson (Capt., E. Yorks R.) is re-seconded for two years' duty with the R.A.F. (Apr. 8); Flg. Off. P. R. Cawdell is transferred to the Reserve, Class A (Mar. 27); Flg. Off. G. A. Atkinson is transferred to the Reserve, Class C (Mar. 22); Flg. Off. P. J. Phelan (Lt., Indian Army, retired) relinquishes his S.S. comn. on account of ill-health (Apr. 7). The following resign their S.S. comns.:—Flg. Off. C. S. Hartung (Apr. 8); Plt. Off. A. S. Hutton (Apr. 4).

Medical Branch.—Flg. Off. H. W. D. Mackenzie, M.B., ceases to be seconded to the Royal Infirmary, Edinburgh (Apr. 1).

Reserve of Air Force Officers.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—R. A. Coulthurst (Feb. 14); P. J. Waller (Feb. 19); H. C. Norman (Mar. 2); H. W. Petter (Mar. 16); J. G. Webster (Mar. 16); A. G. Squire (Mar. 18); C. A. Jamblin (Mar. 18); J. W. Bowler (Mar. 23); G. FitzG. Atkinson (Apr. 1). Flt. Lt. W. R. S. Humphreys, A.F.C., is employed with the Regular Air Force for a period of two years (Mar. 31); Flg. Off. A. G. Lambert is confirmed in rank (Apr. 21); Flg. Off. A. MacKenzie is transferred from Class C to Class A (Apr. 21); Flg. Off. G. Cameron is transferred from Class A to Class C (Apr. 21); Flg. Off. J. Piggott is transferred from Class B to Class C (Apr. 21); Flg. Off. J. Robertson is transferred from Class B to Class C (Jan. 5); the commission of Plt. Off. on probation N. G. Durham is terminated on cessation of duty (Mar. 21).

Apr. 24.

General Duties Branch.—Plt. Off. E. C. Dearth is promoted to the rank of Flg. Off. (Apr. 15); the seniority of Flg. Off. J. C. Hill in that rank is antedated to Dec. 10, 1923; Flt. Lt. D. W. Grinnell-Milne, M.C., D.F.C., is placed on half-pay, Scale B (Apr. 14); Plt. Off. H. R. F. Baxter is placed on half-pay, Scale A (Apr. 16); Flg. Off. J. F. Horsey is transferred to the Reserve, Class A (Apr. 10); Sq. Ldr. B. P. H. de Roeper, A.F.C., is placed on the retired list (Apr. 16); Flg. Off. S. R. Boldero relinquishes his S.S. comn. on account of ill-health (Apr. 15).

Stores Branch.—Flg. Off. A. J. Grant resigns his S.S. comn. (Apr. 15).

Medical Branch.—Flt. Lt. F. E. Johnson is granted a perm. comn. in the rank stated (Apr. 15); Flt. Lt. R. H. Wace, M.B., relinquishes his temp. comn. on ceasing to be employed (Mar. 28).

Reserve of Air Force Officers.—Plt. Off. J. D. Parkinson is promoted to the rank of Flg. Off. (Apr. 9).

Princess Mary's Royal Air Force Nursing Service.—Miss V. L. Crampton resigns her appointment as Sister (Mar. 3).

Appointments.

Week ending Apr. 27.

General Duties Branch.—Group Captain E. F. Briggs, D.S.O., O.B.E., to R.A.F. Depot pending disposal on transfer to Home Estab., 22/3.

Wing Commanders A. B. Gaskell, D.S.C., to Air Ministry for Technical Staff duties, 4/5. D. C. S. Evill, D.S.O., A.F.C., to R.A.F. Staff College, Andover, for duty as Instructor, 4/5. E. L. Tomkinson, D.S.O., A.F.C., to H.Q., Coastal Area, pending disposal, 1/5.

Squadron Leaders C. J. Mackay, M.C., D.F.C., to R.A.F. Depot, 19/3. W. W. Hart, M.B.E., to Electrical and Wireless School, Flowerdown, 2/5. F. H. W. Guard, C.M.G., C.B.E., D.S.O., to Inland Water Transport, Iraq, 1/4. A. W. H. James, M.C., to R.A.F. Depot on transfer to Home Estab., 28/3. R. J. Mounsey, O.B.E., to R.A.F. Depot on transfer to Home Estab., 24/3.

Flight Lieutenants E. S. Ades, to R.A.F. Depot, 23/4. A. J. Rankin, to School of Naval Co-operation, Lee-on-Solent, 1/5. W. E. Somervell, to School of Army Co-operation, Old Sarum, 19/3. A. W. Clemson, O.B.E., D.S.C., and D. C. Balfour, to Inland Water Transport, Iraq, 1/4. G. E. Godsave and A. R. Churchman, D.F.C., to H.Q., Iraq, 1/4. L. V. Hirst, to No. 4 Armoured Car Coy., Iraq, 1/4. A. S. Maskell, to R.A.F. Base, Calshot, 4/5

Flying Officers E. R. Hockaday, to remain at Air Ministry. E. C. Delamain, M.C., and A. F. Lingard, to No. 5 F.T.S., Sealand, 27/4. E. H. M. David and F. E. Nuttall, to No. 2 F.T.S., Digby, 27/4. H. S. Davidson, to No. 29 Sqdn., Duxford, 27/4. (Hon. Flt. Lt.) W. F. R. Gough, to No. 41 Sqdn., Northolt, 27/4. R. N. Waite, to R.A.F. Cadet College, Cranwell, 27/4. J. G. Hawtrey and A. G. Hill, to No. 1 F.T.S., Netheravon, 27/4. (Hon. Flt. Lt.) R. S. T. Fleming, to No. 3 Sqdn., Upavon, 27/4. F. H. Woolliams, to No. 17 Sqdn., Hawkinge, 27/4. H. V. Kerckhove, M.C., to No. 19 Sqdn., Duxford, 27/4. G. R. M. Clifford, to No. 111 Sqdn., Duxford, 27/4. R. V. Bramwell-Davies, to Basrah Group H.Q., 1/4. H. J. Soper, C. C. Clark, J. Rodger, D.S.M., W. Gill, J. H. Slater, M.B.E., and F. H. Bedford, M.C., M.M., to Inland Water Transport, Iraq, 1/4. F. B. Young, to No. 5 Arm. Car Coy., Iraq, 1/4. L. H. Cooper, to No. 6 Arm. Car Coy., Iraq, 1/4. J. C. Jeffrey, M.C., to No. 4 Arm. Car Coy., Iraq, 1/4. C. J. Watson, to H.Q., Iraq, 1/4. E. J. Rossiter, to R.A.F. Depot on transfer to Home Estab., 24/3. F. V. Gauntlett, to I.A.A.D., Henlow, 22/4. R. P. Mollard, to No. 15 Sqdn., Martlesham Heath, 23/4. C. H. Ratcliffe, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 24/3. V. Croome, to School of T.T. (Men), Manston, 27/4. O. E. Worsley, to M.A.E.E., Felixstowe, 4/5.

Pilot Officers E. C. Dearth, to No. 9 Sqdn., Manston, 1/5. M. E. de L. Hayes, to No. 207 Sqdn., Eastchurch, 22/4. T. W. G. Cattell, to No. 3 Sqdn., Upavon, 27/4. The undermentioned Pilot Officers are all posted on appointment to S.S. Comns. (on probation) with effect from 31/3:—H. R. Bardon, E. L. Cowan and W. J. R. Early, to No. 12 Sqdn., Andover. M. Brunton, D. De Robeck and H. Peck, to No. 111 Sqdn., Duxford. P. Clavell-Blount, S. A. B. Harries and T. H. Rowlands, to No. 9 Sqdn., Manston. I. G. E. Dale, A. R. Dunlop and V. C. Taylor, to No. 17 Sqdn., Hawkinge. F. W. Field, G. J. C. Mahony and T. H. Perry-Keene, to No. 41 Sqdn., Northolt. F. H. Hannaford, R. R. Turner and W. G. Wainwright Fahey, to No. 99 Sqdn., Bircham Newton. W. J. Kelly, R. Matheson and H. A. M. Weir, to No. 11 Sqdn., Netheravon.

Medical Branch.—Squadron Leader A. F. Rook, M.R.C.P., D.P.H., to Palestine General Hospital, 11/4. Flight Lieutenant C. A. Meaden, to No. 111 Sqdn., Duxford, 16/4. Flying Officers D. B. Smith, M.B., to School of T.T. (Men), Manston, 18/4. G. J. Griffiths, to I.A.A.D., Henlow, 27/4.

Stores Branch.—Squadron Leaders H. T. Foxen, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 8/3. Flight Lieutenants F. R. Wilkins, to I.W.T., Iraq, 1/4. F. J. W. Humphreys, to Stores Depot, Iraq, 1/4.

Accountant Branch.—Squadron Leader E.W. Gregory, M.C., to No. 3 S.D., Milton, 21/5. Flight Lieutenants H. G. Bushell, to R.A.F. Base, Leuchars, 7/5. W. Rollinson, to H.Q., Coastal Area, 28/4. R. F. C. Metcalfe, to I.W.T., Iraq, 1/4. Flying Officers C. W. Price, to H.Q. Accountant Office, Iraq, 1/4. J. C. Christian, M.C., to R.A.F. Depot on transfer to Home Estab., 8/3. J. Charles, to No. 39 Sqdn., Spittlegate, 6/5.

A Royal Visit to Cranwell.

Princess Mary, Viscountess Lascelles, who was attended by Miss Kenyon-Slaney, visited the Royal Air Force Hospital and Cadet College at Cranwell on Apr. 24.

Princess Mary, who arrived shortly before noon, was received at the Hospital by Air Commodore A. E. Borton, Air Officer Commanding the Cranwell Station, Miss J. M. Cruickshank, Matron-in-Chief of Princess Mary's Royal Air Force Nursing Service, and Air Commodore D. Munro, Director of the R.A.F. Medical Services. A guard of honour of 100 boys and non-commissioned officers from the Boys' Wing was mounted under the command of Flt. Lt. Brown, and was inspected by the Princess.

The following presentations were made:—Miss Grace Nicholson, Matron of the Cranwell Hospital; Miss E. M. Blair, Senior Sister; Wing Cdr. L. A. Pattinson, Chief Staff Officer; Wing Cdr. H. W. Scott, Principal Medical Officer; Wing Cdr. R. J. F. Barton, Commanding the Boys' Wing at Cranwell; the Rev. D. H. Gillan, the Rev. J. A. Jagoe, and the Rev. F. G. B. Sutherland.

Princess Mary then inspected the Hospital, going through the wards and kitchens. She next proceeded to the Cadets' mess and quarters, where Wing Cdr. E. M. Murray, Assistant Commandant of the College, and Major Dawes were presented to her. At the Sisters' mess Her Royal Highness was entertained at lunch by the Matron-in-Chief and the Matron, the guests including Mrs. Pattinson and Mrs. Barton. The Cadet College band played during lunch.

The R.A.F. Display.

A statement has been issued that His Majesty the King, as Chief of the Royal Air Force, hopes to attend the R.A.F. Display at Hendon on June 27.

The Aeronautical Correspondent of *The Times* in a special article written from Grantham on Apr. 23, states that rehearsals for the Display, which are merely intensified training, are taking place at Spittlegate. Thirty-six machines will take part in the formation flying this year instead of eighteen as last year. The programme for this year contains also an exhibition of wireless control in which the short wave orders issued by the leader of the formation will be picked up by a receiver on the ground, amplified and made audible to the spectators.

R.A.F. Manoeuvres.

The Times of Apr. 17 states:—

The Air Ministry have entered into arrangements with several farmers for acquiring land at Weston Zoyland, near Bridgwater, for air manœuvres during the coming summer. The land, about 600 acres in extent, is known as Weston Fields, and has been approved by the Ministry, by whom it will be occupied from June 1 to Sept. 30.

The site is highly suitable for an air station, being part of a wide stretch of open and flat country, devoid of trees. It is about three miles from Bridgwater, and is near the historic Bussex Rhine, over which the battle of Sedgemoor was fought. Representatives of the Air Ministry have visited the site, on which a camp will be provided for four months, and arrangements are to be made for securing a water supply from the district council's mains. The form which the manœuvres will take has not yet been disclosed.

The Afghan Frontier.

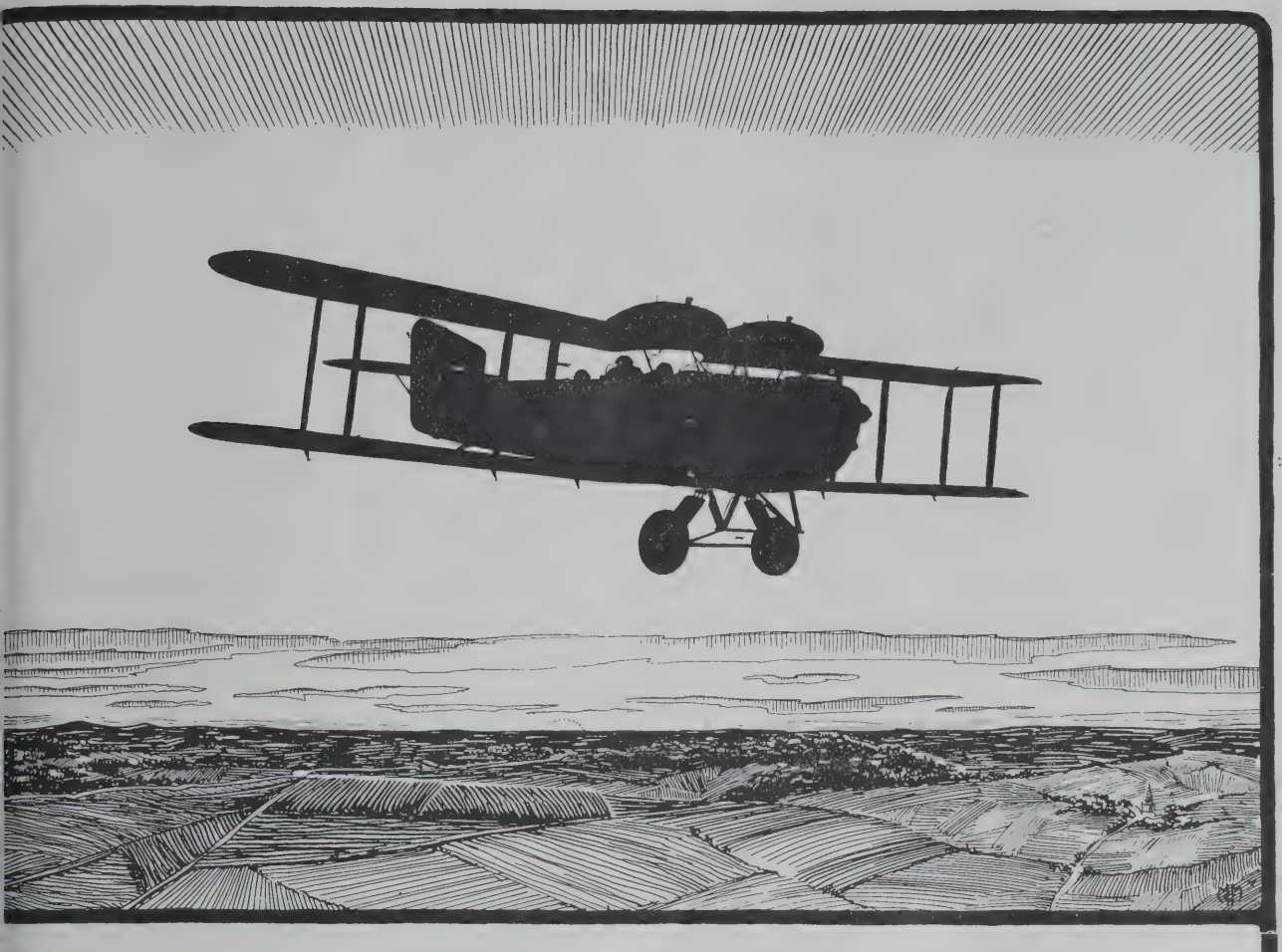
The Times correspondent at Simla, in a communication dated Apr. 22, states:—

As a result of bombing operations in Waziristan the Faridai and Maresai tribesmen have now come in, and the only recalcitrants are a hostile section of the Abdur Rahman Khels.

The operations demonstrated the value of the co-operation of the Air Force in frontier defence, and in view of the enormous Frontier area suggest the desirability of strengthening the Royal Air Force in India, which now comprises six squadrons (72 machines at present strength).

For the Troops in Iraq.

Under the new Postal Regulations newspapers may be sent to Iraq by the overland route at a special fee of 1d. per 2 oz. in addition to the ordinary postage. The time taken will be 12 days to Baghdad from London instead of 28 days by the sea route. They must be marked "Overland Mail, Haifa, Baghdad," and posted in London on Thursday evenings.



A Silhouette of the FAIREY "FAWN" AEROPLANE.

This machine, which is being supplied in quantities to the British Royal Air Force, has been designed so that it can be employed either as a Day Bomber or for Army Reconnaissance Duties.

In common with all FAIREY AIRCRAFT the "Fawn" is fitted with a patent gear by means of which it is possible to increase the lift of the wings in flight so that the machine is still fully controllable during taking off or alighting even when its speed is below the normal stalling point.

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The R.A.F. Memorial Fund.

The Secretary's Report of the activities of the R.A.F. Memorial Fund for the period, Jan. 1 to Mar. 31, 1925, shows that 162 cases have been dealt with during that time exclusive of ex-officers. The total amount issued to ex-members of the R.A.F. was £1,669 18s. 1d. Assistance to members of the post-war R.A.F. amounted to £286 18s. 9d.

Air Defence Recruiting.

The Recruiting Week for the Anti-Aircraft Brigades (Royal Artillery, T.F.) opened on April 27th with a miniature air raid over London. A Bristol Fighter and a Vickers Vimy, belonging to the R.A.F., constituted the enemy on the opening day, and the Bristol Fighter was exposed to heavy fire from the guns of the 53rd Brigade.

A further raid took place between 21.00 hours and 22.00 hours on the same date, when searchlights were used to locate the raiding aircraft. The officers in charge of the anti-aircraft brigade are said to be highly satisfied with the day's work, but whether from the recruiting or the performance point of view one is not informed.

The Royal Canadian Air Force.

The Morning Post of Apr. 22, states :—

Two Canadian V.C. airmen—Wing Cdr. Barker and Col. Bishop—were present at a demonstration of the Moth light aeroplane at the Stag Lane Aerodrome, Hendon, yesterday.

The Canadian Air Force authorities are considering the question of suitable training machines, and Sq. Ldr. Anderson, who is in charge of the training of Canadian pilots, wished to obtain evidence of the flying qualities of the Moth and of the running of the new 4-cylinder Cirrus engine.

Wing Cdr. Barker flew the machine, and, after executing a number of manœuvres, including several loops, landed and expressed himself delighted with the way the machine behaved.

The Survey of the Great Barrier Reef.

On June 13, 1924, Flt. Lt. Mustard, D.F.C., Flg. Off. Swinburne, R.A.A.F., and eight other ranks from Point Cook, left Melbourne, together with a Fairey III D. seaplane (360 h.p. Rolls-Royce engine) on H.M.S. *Geranium*, to carry out an aerial survey of the Great Barrier Reef. On Dec. 13 the 1924 portion of the survey was completed, and the party returned to Sydney to await Ministerial approval for the resumption of the survey in May, 1925, the beginning of the dry season.

During the six-months' operation, a survey was made of 800 square miles of uncharted water and nineteen reefs were photographed in mosaic from an altitude of 10,000 feet. The total flying time was 70 hours. The survey was wholly successful, the work being carried out without a hitch and under many difficulties. Visibility was affected by the position of the sun, and photography was possible only during two hours daily. Two months' time was lost owing to bad weather, and heavy seas frequently destroyed the floating marks which had been put out to obtain scale and orientation of the reefs.

Flt. Lt. Mustard, D.F.C., said that the Fairey III D., which, incidentally, was a sister machine to the one which Wing Cdr. Goble and Flt. Lt. McIntyre flew round Australia, stood up to its job magnificently, even in the heaviest weather, and that at the end of the Survey not a wire had strained nor a screw worked loose. He also added that the Rolls-Royce Eagle never let them down and never failed to start.

R.A.F. SPORTS.

The R.A.F. Hunt.

The R.A.F. Hunt Meeting was held over a course near Boothby Graffoe, near Lincoln, on Apr. 8. The going was heavy.

R.A.F. Open Steeplechase :—Wing Cdr. R. Barton's *Wasp VI* (Owner), 1; Sq. Ldr. Everidge's *Regina* (Owner), 2; Sq. Ldr. G. Williams's *Turbantia* (Owner), 3. Also ran : Air Commodore Longmore's *Kite Hawk* (Owner), Air Vice-Marshal Brooke-Popham's *Bishop* (Owner), Wing Cdr. Read's *Wonder* (Owner), Sq. Ldr. Leacroft's *Sweet Seventeen* (Owner), Sq. Ldr. Beauchamp's *Another Dan* (Owner). Four lengths.

R.A.F. Welter Steeplechase :—Wing Cdr. Barton's *Terebene* (Owner), 1; Sq. Ldr. Hanmer's *Retainer* (Owner), 2; Flg. Off. E. A. Smith's *Drummer II* (Owner), 3. Also ran : Air Vice-Marshal Brooke-Popham's *Snowstorm* (Owner), Wing Cdr. Wise's *Leek II* (Owner), Sq. Ldr. Hanmer's *Artist* (A. V.-M. Lambe), Wing Cdr. Read's *Emma* (Owner), Wing Cdr. Verney's *Chorister* (Owner). Distance.

R.A.F. Novices' Steeplechase :—Flg. Off. S. Potter's *Peter* (Owner), 1; Cranwell Hunt Club's *Poppy* (Canter), 2; Sq. Ldr. Williams's *Ginger* (Owner), 3. Also ran : Flt. Lt. R. Cochrane's *Major* (Owner), Plt. Off. P. Stainer's *Duty* (Owner), Flt. Lt. W. Deward's *Splitear* (Owner). Half-length.

The Nomination Open Race was won by Mr. G. A. Tonge's *Worlington* (G. M. Tonge).

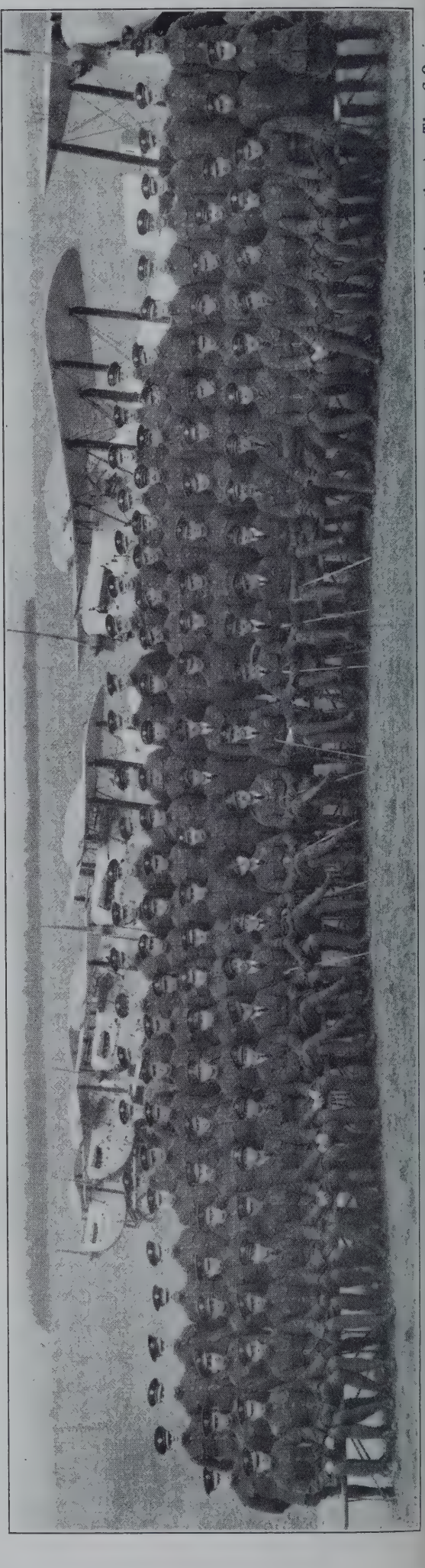
In the Farmers' Steeplechase Sq. Ldr. Ridley rode Mr. Dowser's *Weapon*, but was not placed.

The team Challenge Cup for the Unit gaining most points was won by Cranwell with 18 points (three firsts and one second). Halton was second with 5 points. No. 7 Group third with 3 points, and Coastal Area fourth with one point.

Boxing.

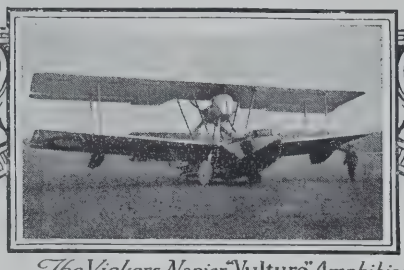
The R.A.F. Team Championships.—At Flowerdown on Apr. 23 Manston beat the Electrical and Wireless School by six wins to three in the final of the Open Team Boxing Championship.

Division A.—This year the Team Championship has been run on the same lines as a Football Cup Competition, teams meeting one another until two were left to compete in the final. The Army adopted this scheme some years ago; it has been a success in the Air Force. There are two divisions, "A" for large stations, and



No. 11 (Bombing) Squadron, R.A.F., stationed at Netheravon. No. 11 Squadron consists of H.Q. and 3 Flights and is equipped with Fairey Fawns (Napier engines). The C.O. is Sq. Ldr. E. A. B. Rice, M.C. The Squadron was formed in February, 1915, as a unit of the R.F.C. It was disbanded at the end of 1919 and reformed on Jan. 15, 1923.

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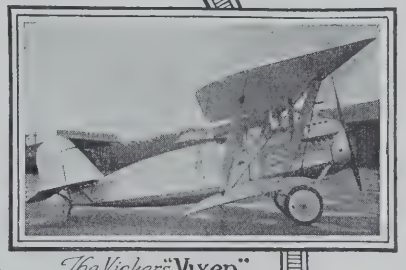
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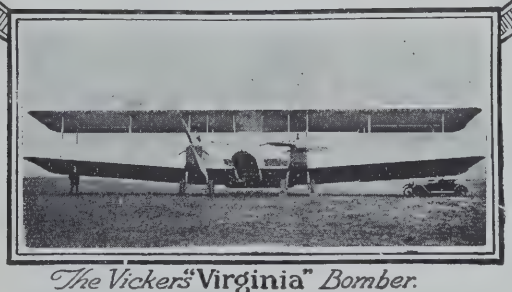
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"B" for smaller stations. The final in division "B," between Duxford and Kenley, will take place next week.

Officers' Contests.

Light-weight: Flg. Off. Black (Flowerdown) beat Flg. Off. Reedman (Manston) in the first round. Flg. Off. Black is R.A.F. champion and outclassed his opponent.

Welter-weight: Flg. Off. Larman (Manston) beat Flt. Lt. Carpenter (Flowerdown) on points. The winner is a good type of public school boxer and if he can develop a punch will win the R.A.F. title one day.

Middle-weight: Sq. Ldr. Stewart (Manston) beat Flg. Off. Van Bloomestein (Flowerdown) easily on points. It was good to see a senior officer in the Kent team; quite apart from this, Sq. Ldr. Stewart has a hefty wallop in each fist; his boxing was well up to open competition standard and he made no mistake about winning right away from the first gong.

Airmen's Contests.

Bantam-weight: AC.1. Codling (Manston) beat AC.1. Hogan (Flowerdown) on points. A needle fight, with Codling always in front.

Feather-weight: AC.1. Kinsman (Flowerdown) beat L-AC. Willison (Manston) on points. This was perhaps the best of a lot of good fights; the Manston man was dead game, and, though showing signs of punishment, he gave his more experienced opponent plenty to do right up to the final gong.

Light-weight: L-AC. Preston (Manston) beat AC.2. Wood (Flowerdown). Preston is a recent Wakefield winner and won here with some points to spare.

Welter-weight: AC.2. Cardwell (Flowerdown) beat AC.2. Garratt (Manston) on points, but not by many.

Middle-weight: AC.1. Howse (Manston) beat AC.2. Ingram (Flowerdown). The winner is the most improved boxer in the Service; he might have won the championship recently at Uxbridge.

Heavy-weight: AC.1. Rudder (Manston) beat Cpl. Heath (Flowerdown) on points. Heath made Rudder (who is reserve I.S.B.A. amateur heavy-weight and runner-up for the R.A.F. title) go all the way, and was a really good loser.

The fighting was of the cleanest possible description; throughout the evening Flt. Lt. Porter, the referee, had only on one occasion to speak to any competitor. The R.A.F. Chaplain-in-Chief kept time and the judges were officers of the Rifle Brigade, the Loyals and Hants Regt. Air Vice-Marshal F. R. Scarlett (President of the R.A.F. Boxing Association) presented the prizes and handed the Challenge Trophy to Flt. Lt. Anne, skipper of the Manston team, who were all congratulated on lifting the double event—the Sir Charles Wakefield Trophy and the Team Championships.—[Felix.]

The Afghan Air Force.

A note from India referring to the Afghan Air Force say that the two D.H.9s and the two Avros which Mr. Murph was supplying to the Afghan Government were, accordin to the writer's information, supplied to Mr. Murphy at som earlier date by the Aircraft Disposal Company. At any rate the D.H.9s were of the old War-time type.

These machines arrived at Peshawar in December, 1924, an were still there in April, 1925, presumably awaiting favour able summer weather. The writer of the note adds tha flying Avros from Peshawar to Kabul would be a hazardou adventure under the most favourable conditions. He als states that in the autumn of 1924, when the British Goverr ment supplied two Bristol Fighters to the Afghan Goverr ment, the Afghans had two reputed pilots, both German They were taken up on dual control machines by R.A.F pilots, and it was found that one had no knowledge of flyin at all, but that the other was reasonably good.

The last rumour which reached India was to the effec that both machines had been crashed and that the Afghan would neither pay the pilots nor let them leave Kabul.

At the time that these Bristols were supplied there wer supposed to be at Kabul two single-seat Capronis with six cylinder Fiat engines, one Russian machine of unknow pattern, and several engines, including a new Mercedes an a new Hispano-Suiza. No anxiety was felt in India as t possible raids from the Afghan side of the frontier.

A Royal Visit.

H.R.H. The Infante Don Alfonso of Spain, accompanie by his son, Prince Albert, visited the Works of th Gloucestershire Aircraft Company at Cheltenham, on Tue day, Apr. 7, 1925. The Royal guests left Croydon Aerodrom by air at 10.45 a.m., and landed at the "Gloster" Aerodrom at Brockworth soon after midday. They were met at th aerodrome by Capt. L. W. Charley and Mr. H. P. Folland After receiving an expression of deep regret from the Manag ing-Director, Mr. D. Longden, who was unable to welcom them in person owing to a sudden illness, they witnessed a excellent demonstration flight on a Grebe single-seater fighte by Mr. Larry Carter. The Infant being an enthusiastic aviator himself an thoroughly abreast of all the latest de velopments in the aviation world, wa already familiar with the excellent fly ing qualities of the Grebe, and took th greatest interest in the machine, an also in the new Grouse II Inte mediary training machine with Arn strong-Siddeley Lynx engine.

Their Royal Highnesses were the entertained to lunch by the Directors o the Company at the Lansdown Hote After lunch they made a thorough tou of the works, piloted by Mr. H. Folland, and evinced a lively interest every detail of the constructional wor

Their Royal Highnesses, after e pressing great satisfaction with the visit, returned to the aerodrome, an left again by air at 5 p.m., arriving Croydon at 6.10 p.m.

The Royal Aeronautical Society.

Mr. J. L. Pritchard has at the r quest of the Council agreed to act Honorary Secretary of the Roy Aeronautical Society. He will take u his duties on May 1.



A ROYAL INSPECTION.—H.R.H. T Infante Don Alfonso of Spain inspec ing a Gloster Grebe at the Brockwor Aerodrome, Cheltenham. From right left are seen Mr. H. P. Folland, M Larry Carter H.R.H. The Infante D Alfonso and his son, Prince Albert.

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Class C bis (seaplanes):—Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h.

Carrying 250 kgs. of useful load:—Distance covered without landing, 1,102 kms. Speed over 100 kms., **159·151** km.p.h. Speed over 200 kms., **158·834** km.p.h. Speed over 500 kms., **156·699** km.p.h. Speed over 1,000 kms., **152·335** km.p.h." *The Aeroplane*

The aggregate horse-power of the Aero Engines built by Rolls-Royce, Limited, during the past ten years amounts to over

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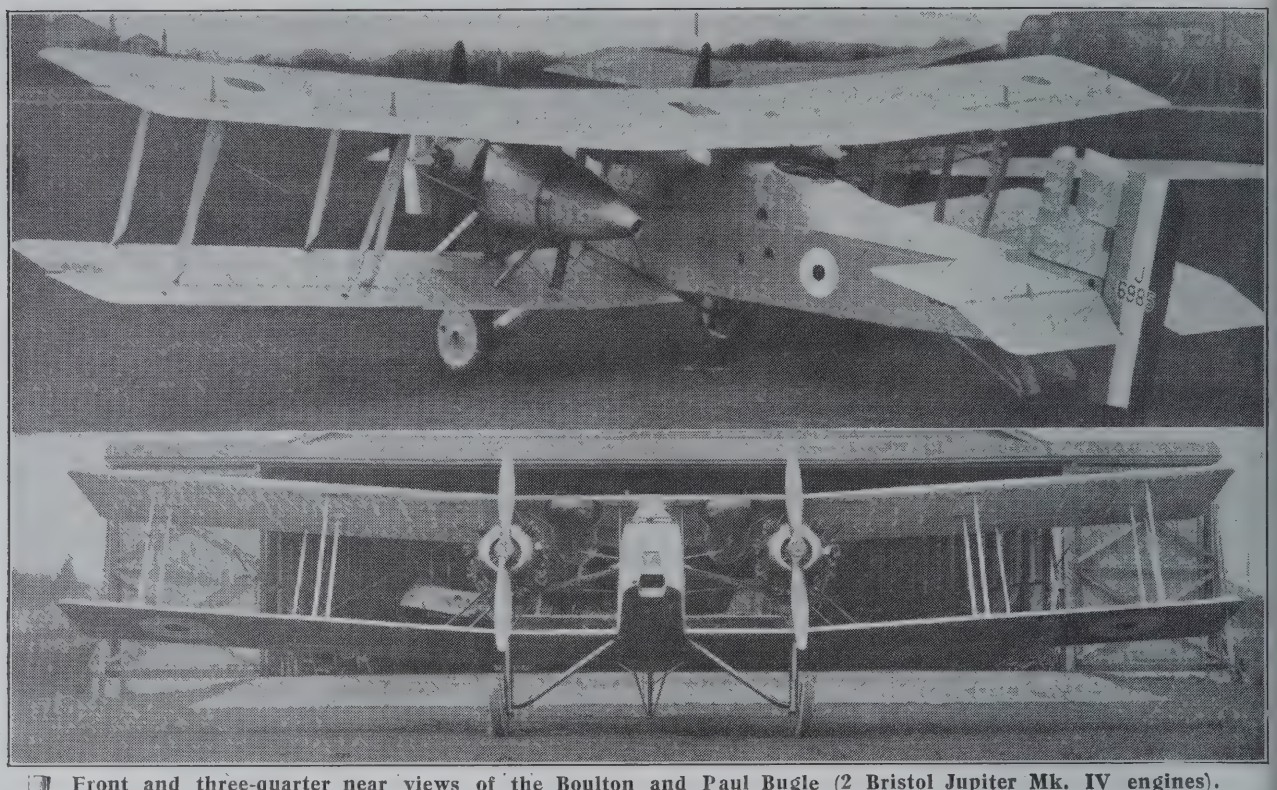
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C.P.

THE BOULTON AND PAUL BUGLE.



Front and three-quarter near views of the Boulton and Paul Bugle (2 Bristol Jupiter Mk. IV engines).

The Bugle is a metal-framed, twin-engined, medium-range day-bomber, fitted with Bristol Jupiter engines. In general arrangement the machine may be regarded as a development of the Bourges twin-engined machines of this make. It is a biplane with wings of equal span, but of greater chord at the top than at the bottom. The leading edges of the top and bottom wings are in the same vertical plane in flying position and the wing spars of both wings are equally spaced from the leading edges, so that the interplane struts are parallel, and the whole bracing system is similar to that of an equal winged, unstaggered machine.

The wings are built on box spars of corrugated steel strip, and have steel ribs. The interplane struts are all of uniform section, the inner pair of steel and the outer pair of duralumin. Essentially these struts are a D section, built of two strips rivetted together. The engine mounting is built up mainly of circular section tube, these being of Boulton and Paul's locked-joint type, drawn from high-tensile strip.

Both top and bottom wings have centre sections extending out to and carrying the engine mountings. There is a single Vee-type undercarriage under each engine, with a bent-up axle on each side attached to the joint of front spar and fuselage. The front leg of each Vee is of the oleo-pneumatic type, in which compressed air (pumped in with a tyre pump as necessary) acts as the springing medium. This air is compressed by the oil displaced through the damping " leak holes " and consequently the air chamber is entirely oil-sealed. The inflating valve—which is a standard tyre valve with a metal cone to replace the usual rubber cone—is shut off after inflation by a screw-down cock. As a result it is found that the air chambers maintain their pressure for months on end.

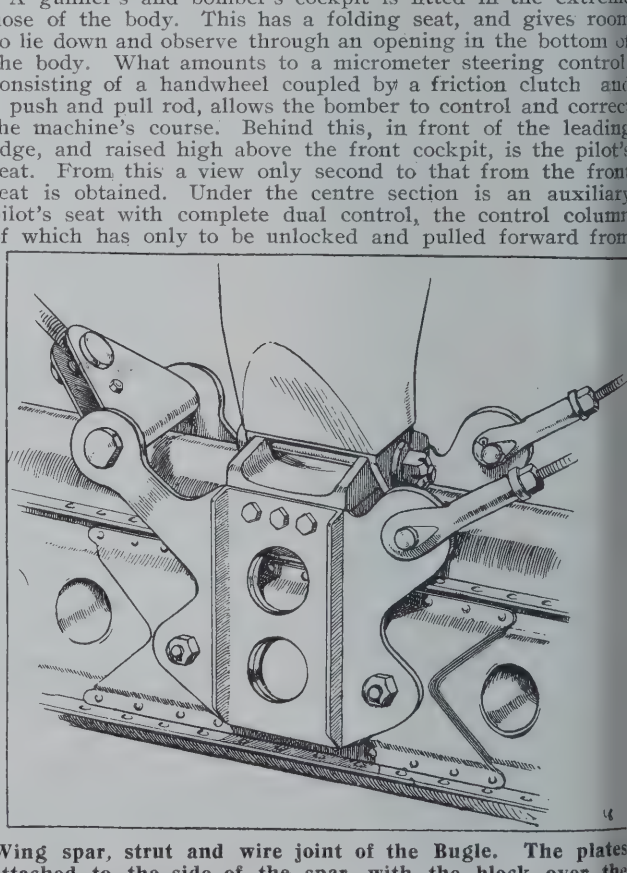
The fuselage is a rectangular frame with four longerons, the top pair of which slopes up steadily from nose to stern-post. From the back spar of the lower wings the bottom longerons are parallel to the top ones, but from the nose to the rear spar, the lower longitudinals are horizontal. The whole of this fuselage framing is of steel tubing—the longerons being built up of two drawn sections in such a way that by cutting out one of the two sections a bearing is given on the remaining section for an angle plate to take struts or wires. The struts are drawn from one strip and have a locked, close joint.

On top of the steel fuselage frame is mounted a very light superstructure of poplar three-ply on spruce formers. This is mostly of triangular section except in way of the various cockpits.

The tail skid takes the form of a triangular pyramid, one leg of which is telescopic and contains an oleo-pneumatic element similar to those of the main undercarriage. This is shod with a large, pressed bowl of manganese steel to which is rivetted a further manganese-steel cast shoe of about one inch thickness. (This is specially designed to meet treat ment regularly encountered at Martlesham Heath).

The tail plane is a monoplane, with divided elevators, an is adjustable from the pilot's seat in flight. All bracing at tachments to this plane are hinged about the hinge axis, s that no distortion of the frame occurs when the tail angle i altered. There is a single central fin and an enormou balanced rudder.

A gunner's and bomber's cockpit is fitted in the extrem nose of the body. This has a folding seat, and gives roon to lie down and observe through an opening in the bottom o the body. What amounts to a micrometer steering control consisting of a handwheel coupled by a friction clutch an a push and pull rod, allows the bomber to control and correc the machine's course. Behind this, in front of the leadin edge, and raised high above the front cockpit, is the pilot' seat. From this a view only second to that from the fron seat is obtained. Under the centre section is an auxiliar pilot's seat with complete dual control, the control colum of which has only to be unlocked and pulled forward fro



Wing spar, strut and wire joint of the Bugle. The plate attached to the side of the spar, with the block over the spar, form a unit which protects the spar from any off-set moments from loads in other members.

D·H "MOTH" D·H

TWO SEATER LIGHT AEROPLANE

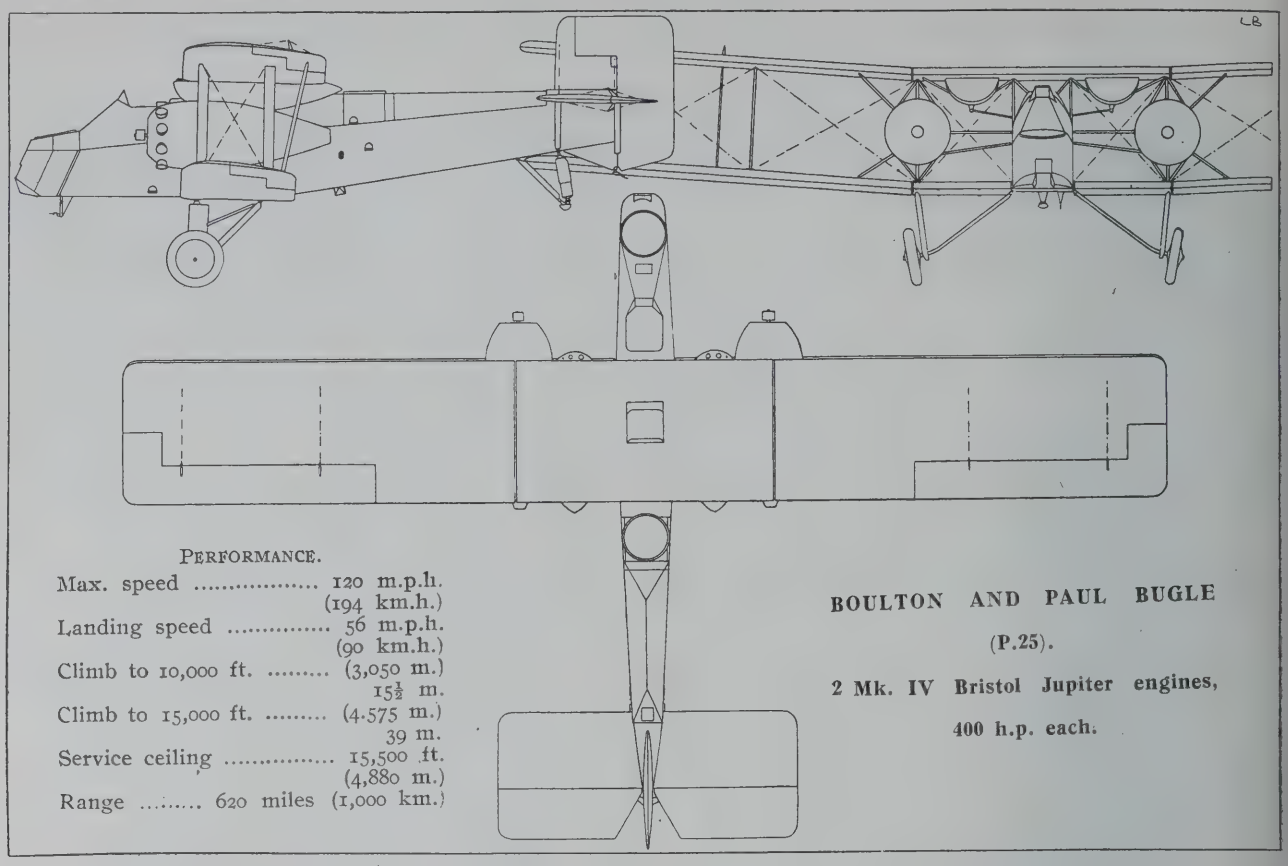
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PERFORMANCE.

Max. speed	120 m.p.h. (194 km.h.)
Landing speed	56 m.p.h. (90 km.h.)
Climb to 10,000 ft.	(3,050 m.) 15½ m.
Climb to 15,000 ft.	(4,575 m.) 39 m.
Service ceiling	15,500 ft. (4,880 m.)
Range	620 miles (1,000 km.)

BOULTON AND PAUL BUGLE

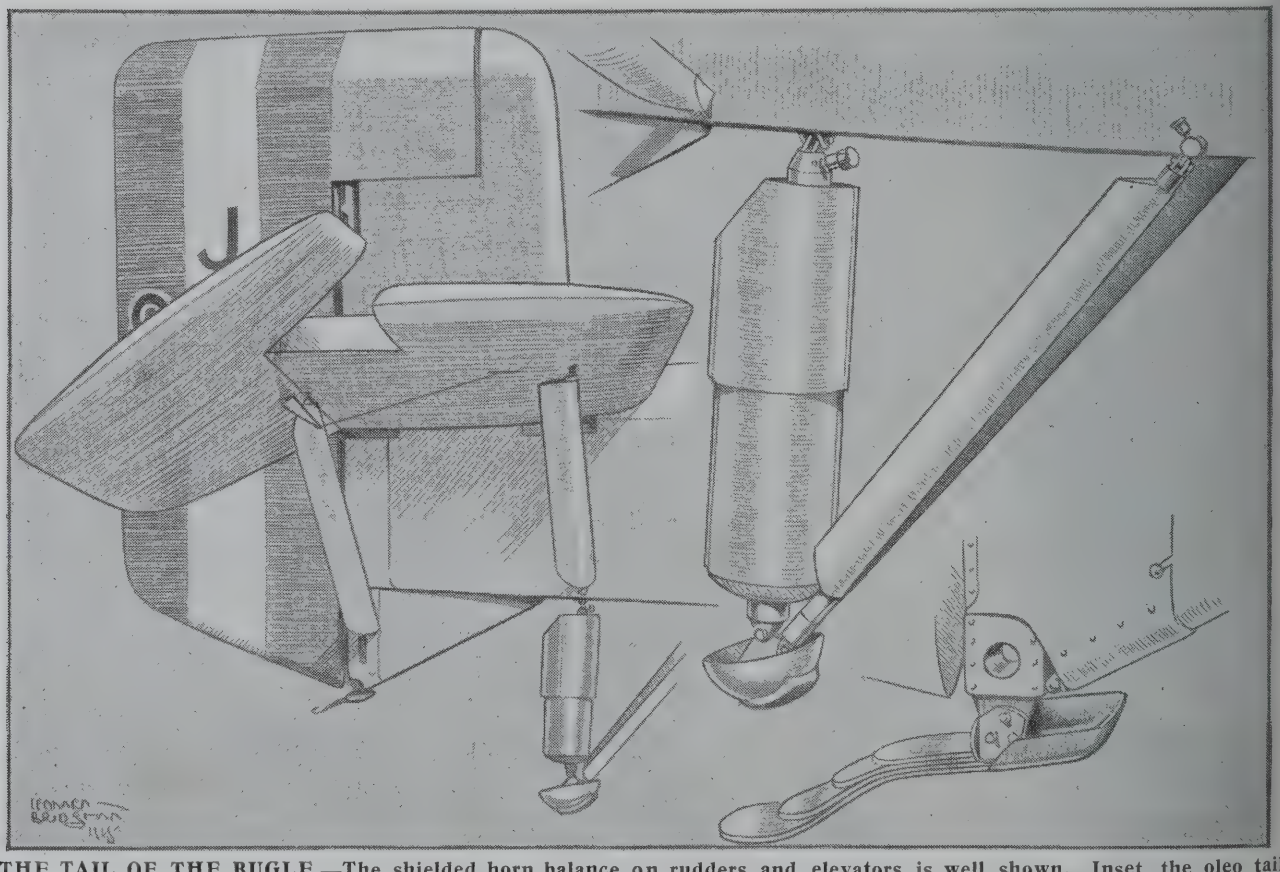
(P.25).

2 Mk. IV Bristol Jupiter engines, 400 h.p. each.

a clip on the dash-board, to come into operation. Behind this is an after-gunner's cockpit.

There is a gangway right through the body, so that any occupant can communicate with any other, and small runways, with wire-operated message carriers allow notes to be passed backwards and forwards.

In a heavy, high-performance twin-engined machine of this kind, controls are of very great importance. The most striking features concerning this machine's control surfaces are the huge size of the rudder and the method of balancing. The balance used is essentially of the horn type, but, instead of overhanging the wing or fin, the horn pieces have their leading edges inset into the surface ahead of them, so that they are shielded thereby at small angular settings from normal, while the leading edge of the horn is in way of the surface ahead of it. With the usual horn-type of balance the aileron or rudder tends to be unstable at small angular settings, unless the balanced area is reduced to such an extent



THE TAIL OF THE BUGLE.—The shielded horn balance on rudders and elevators is well shown. Inset the oleo tail skid with its manganese steel shoe, and the auxiliary tail skid.

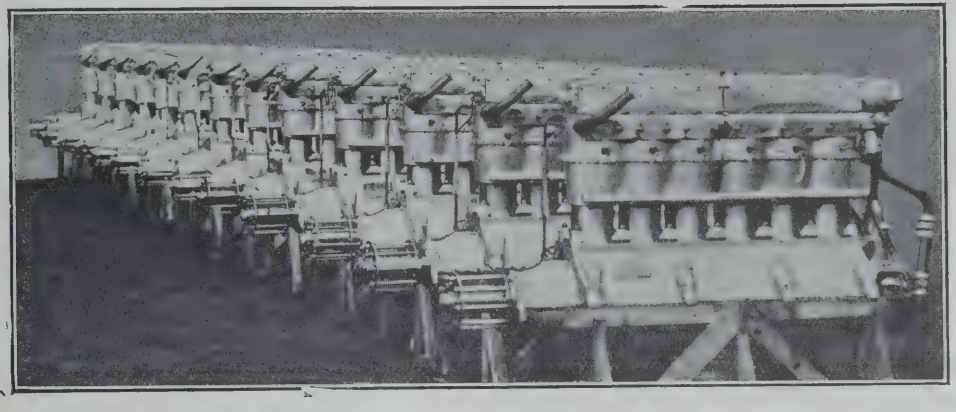
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A Handley Page three-engined machine fitted with 2 "PUMA" engines and 1 "EAGLE," piloted by Lieut. Thieffry, has recently completed a flight from **Brussels** to the Belgian Congo (5,000 miles) crossing the **Sahara** and **equatorial forests** under the worst weather conditions possible, including **tropical rain and sun,** for over six weeks without shelter.

The "PUMA" engines used on this flight were prepared and supplied by

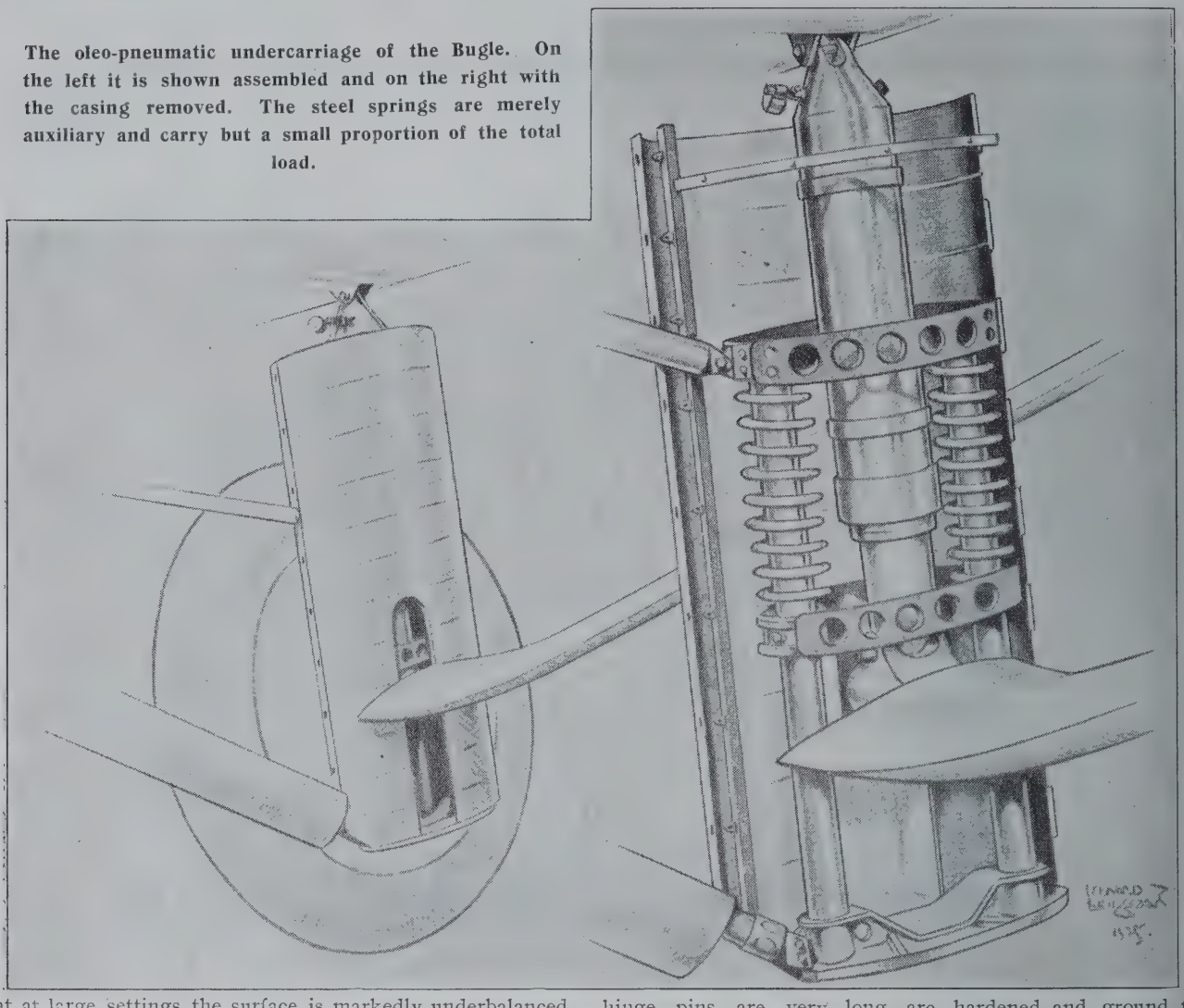
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The oleo-pneumatic undercarriage of the Bugle. On the left it is shown assembled and on the right with the casing removed. The steel springs are merely auxiliary and carry but a small proportion of the total load.

that at large settings the surface is markedly underbalanced. With the shielded horn at fine angles, the fixed and moveable surfaces together act as one combined surface, and the instability disappears. When the angle is sufficient to bring the leading edge of the horn clear of the forward surface, the region of instability has passed.

By avoiding this instability of the horn balance this type of balancing allows greatly increased balancing to be used at the large angles. As a result, on the Bugle, the pilot is able to hold the rudder in any position at any speed. He can turn against one engine even without using the compensating springs. Incidentally this rudder is sufficiently powerful to overcome the aileron yawing moments when the machine is stalled, and this machine, having ample longitudinal control and stabilising surfaces, is, therefore, of the class which can be controlled beyond the stall.

The control springs fitted to the rudder are operated by a pair of hand levers, fitted, one on each side of the pilot's seat. Each of these levers on being pulled up extends a spring attached to the rudder bar on its one side. Thus the pilot can relieve his leg of any rudder-bar load necessary to keep a given course, even with one engine stopped or running at reduced power. Not only so, but by pulling up both levers any required steadying effort can be applied to the rudder, and the machine can be set on a course, and the feet taken off the bar by adjusting these levers correctly.

In conjunction with the tail-setting gear, the machine will maintain a steady course and speed when left to herself. The machines in use in the R.A.F. are regularly flown long distances, "hands- and feet-off."

An interesting detail of the Bugle is the hinged engine mounting for the Jupiter engine. This type of mounting for radial engines was originally designed by Boulton and Paul and is covered by patents belonging to them. The general scheme of hinging the engine plate has obvious advantages, and a number of such mountings have been designed and fitted to radial engines by other firms. Practically all of these have however given trouble owing to slack developing in the hinged joints, so that when the engine is swung out the whole unit drops on the hinges, which leads to great difficulty in swinging the engine back into place.

In the Bugle, and other Boulton and Paul machines, the hinge pins are very long, are hardened and ground to standard Morse taper, are fitted into hardened hinges, and are screwed up fairly tightly into position. To prevent their being screwed up too tight, the nut on the hinge pin is made circular and provided with holes for a tommy-bar. A tommy to fit each of these nuts, of very limited diameter and of soft material, is secured to the engine mounting by a steel chain, and incidentally is used to lock the nuts in position. Any attempt to overtighten merely bends the bar.

This engine mounting has proved to be free from the defects encountered in others of the type, and is found to be very satisfactory in service.

The equipment of these machines is extremely complete—but unfortunately being practically entirely of a military type it may not be described.

SPECIFICATION.

Span ... 62 ft. 6 in. (19.1 m.)	Weight (with normal full load)...8,300 lbs. (3,762 kg.)
Length 39 ft. 9 in. (12.1 m.)	Engines ... 2 Bristol Jupiters 420 h.p. each.
Height ... 15 ft. 4 in. (4.67 m.)	Wing loading ... 9 lbs./sq. ft. (44.3 kg./m².)
Chord (top) 8 ft. 6 in. (2.59 m.)	Power loading ... 9.9 lbs./h.p. (4.4 kg./h.p.)
Chord (bottom) ... 7 ft. 0 in. (2.14 m.)	
Wing area 925 sq. ft. (86 m².)	

The Busk Studentship.

A vacancy having arisen for the tenure of one of the Busk Studentships in Aeronautics during the year 1925-26, the Trustees hope to make an appointment about July next.

This studentship, of the approximate value of £150, tenable for one year, was founded in memory of E. T. Busk, who was killed during experimental flying at Farnborough in 1914. It is open to any man or woman of British descent who is a British subject, and its object is to enable the holder to engage in research or preparation for research in aeronautics, particularly in regard to stability, meteorological questions bearing on flight, or the effect of gusts—all these being subjects in which Mr. Busk was specially interested.

Terms and conditions affecting the studentship, and forms of application, therefore, can be obtained on application to Prof. B. M. Jones, Engineering Laboratory, Cambridge.


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ANALYSIS OF FIGURES FOR THE PAST WEEK:

Trips per Day.—Monday, 15; Tuesday, 14; Wednesday, 22; Thursday, 20; Friday, 21; Saturday, 17; Sunday, 13.

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London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 69, passengers 244, freight 8 tons.

AIR UNION:

Paris—London: Machines 32, passengers 99, freight 9½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 11, passengers 37.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

DE HAVILLAND AIRCRAFT CO. LTD.:

Machines 10, passengers 3.

Total number of trips by British machines: 79, carrying 247 passengers. Foreign machines: 43, carrying 136 passengers.

Comparative Figures:

For week ending Apr. 26:

Machines, 122; Passengers, 383; Crews, 154; Total personnel, 537.

Corresponding week, 1924:

Machines, 45; Passengers, 196; Crews, 72; Total personnel, 268.

Corresponding week, 1923:

Machines, 83; Passengers, 371; Crews, 131; Total personnel, 502.

Corresponding week, 1922:

Machines, 104; Passengers, 193; Crews, 134; Total personnel, 327.

Corresponding week, 1921:

Machines, 52; Passengers, 206; Crews, 66; Total personnel, 272.

Corresponding week, 1920:

Machines, 44, Passengers, 44; Crews, 46; Total personnel, 90.

Croydon Notes.

AT THE SIGN OF THE BLUE BALLOON.

The Croydon Rainmaker, like his brother of darkest Africa, is addicted to the use of gauds and gadgets in the celebration of his mysteries. Thus, besides the cast-iron totem-poles, imitation beehives, and up-ended hayrakes in the Meteorological compound, you shall observe him at certain seasons worshipping the two gods, Big-Gin and Bo-Tley, the latter of whom is a jealous god, prone to veil his head in wrathful cloud.

The manner of his worship is to ascend to the flat roof of his hut and loose off a large blue balloon to the tail of which are attached picture postcards and placatory prayers. Hence the title of these few obscure lines.

Regarding the Croydon Notes, we must explain that he who usually writes them is upon his honeymoon (May Allah protect him!) and whilst on the subject of honeymoons, we cannot help feeling that the origin of the term may interest our more bibulous readers. Our fathers of old were wont to place a vat or tun of mead (made with honey) outside the nuptial door, and this was kept replenished for the delectation of all comers for one lunar month. Hence "honeymoon."

Passing the portals of THE AEROPLANE soon after the ceremony it occurred to us that one who writes so knowingly anent the long-headed Japhetic and the soft-headed Hamitic tribes might be sufficiently well disposed towards ancientry to have left a broached cask of Bass, No. 1, outside the door. But no! Nothing was to be seen save an empty editorial tea-cup.

Sadly we reasoned with the janitor or doorman, and sadly we went away empty, and feeling that the world was indeed grey.

But about those Croydon Notes now! On Thursday last an interesting competition was inaugurated by four rival daily journals, each of whom took a camera and an aeroplane and set forth to take photographs of the Zeebrugge Memorial unveiling. The weather was poor, but Capt. Walters, of Imperial Airways, was first home with the photographic goods on behalf of the *Daily Mail*. Shortly after him the *Daily Mirror* landed, in the form of an Imperial D.H.50. Capt. Muir, for another journal, got as far as Lympne and was there held up for weather, and Capt. Broad, of De Havillands, was stuck at Ostend for the same reason. This was a jolly good show for Imperial Airways and for the two papers involved.

We hear that Imperial Airways have adopted a dark-blue uniform, similar to that worn by the Canadian Air Force, and that the pilot with the most sylph-like figure has been requested to act man-mannequin before the horde (we mean Board) of Directors. Rumours that Sir Eric would display the uniform can be regarded as unfounded.

We have an unfortunate habit as a nation of discarding our uniforms, even those of the Services, as soon as ever we see an opportunity. So, since a pilot on his "ship" will be covered with flying kit, and since it is unlikely that he will walk about in an imitation air force kit more than is absolutely necessary, we suppose our only chance of seeing the kit at all will be upon the stand-by pilot at Croydon, who will doubtless wear a Burberry and no hat in public when possible.

Of our curious British habits of mind, one of the strangest is the way in which we laud and magnify such aliens as Mix, Chaplin, and the small but not inconspicuous Coogan, affording the freedom of our civic cellarage, and causing Mayors with corporations to call them blessed. This we do to the exclusion of English folk who have done something decent. As to aviation, it is refreshing to learn that Mr. van der Hoop had a really magnificent reception in Holland after his return from the Amsterdam-Batavia flight, that he has been decorated and feted and that almost every town in Holland is yet planning to fete him some more. A Dutchman, it seems, who flies the good flight, is by no means without honour in his own country, and this is good for aviation in general.

Mr. Piercey flew the Fokker F.VII back to Holland after Mr. Fokker's recent demonstration here, and, by way of a change, flew the baby Pander whilst there, thus flying Holland's largest and smallest monoplanes, upon both of which he reports very favourably.

The Pander, with its 25 h.p. Anzani engine, looks like a good proposition at £450 complete. It is over here for demonstration purposes, and Mr. Pander states that any British pilot who cares to try it out may do so.

The press were all agog here on Saturday, when a lion was expected by the 2.30 Handley Page from Paris, and we believe that the Traffic and Publicity Superintendents of Imperial Airways were standing by armed respectively with a red-hot poker and a slab of raw red meat in case of accidents. But as the lion proved to be less than a foot long, and broad in proportion, no untoward incident occurred, much to the indignation of several spectators.

Lions, tigers and horses have been carried by air in the past, and, even, we believe, *one* famous actress (see ads.). Things Zoological are flourishing in aviation, and K.L.M. have been carrying millions of coral fish (about ¼-inch long) which, contrary to the usual piscine habit, insist on a temperature of 70°. These have to be kept warm whilst waiting by means of tropical limericks and bon mots.

The appearance of the Zoo van on the aerodrome has caused some despondency amongst the employees, and one famous member of the staff is said to have positively refused to leave the control tower, although his spell aloft was finished, until the van had left the premises. Raisins scattered on the tarmac were of no avail to lure him from his perch.

To the Memory of a Good Comrade.

On Saturday, Apr. 25, the body of the late George Powell was taken by air to his home in Shropshire. A friend writes:—

"Since Croydon became a civil aerodrome no sadder and, in a sense, no more wonderful sight has been witnessed than

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the departure of a D.H.34 on Saturday morning last. A familiar sight enough is a blue D.H.34 to almost every man in the bowed, bare-headed group upon the tarmac who watched this particular machine turn and taxy slowly away. But this machine was different from all others in that it bore the mortal remains of one of the finest and earliest of D.H.34 pilots, George Powell, the friend of every man upon the aerodrome.

"Hard it was to realise that George could no longer hear the familiar roar of the Napier Lion. Bitter indeed it was to remember that he would never again stride cheerily from the Customs to his waiting machine.

"The flowers which filled the cabin of the machine bore very eloquent testimony to the love with which George Powell was regarded by all who knew him, and the finest tribute to his character was afforded by the simple inscription attached to the wreath given by his fellow pilots :—'To the memory of a good comrade.' For in this world there is nothing to compare with a good comrade, and alas the better the comrade the more bitter the loss.

"In that group of men upon the tarmac many a hard-bitten fellow felt tears come to his eyes as the machine rose steadily into the air. And a little ray of comfort came to many of George's friends in the thought that this was the way George Powell would have elected to go to the grave."

Notice to Ground Engineers.

No. 3 of the year 1925.—[INDEX.]

It is hereby notified :—

1. *Cancelled Notices.*—The following Notices to Ground Engineers are cancelled :—1920, Nos. 2, 6, 7, 13 and 17; 1921, No. 10; 1922, Nos. 5 and 9.

2. *Operative Notices.*—The Notices to Ground Engineers remaining in force at this date are listed below.

Ground Engineers and others in possession of the Notices should check their sets and, if they find them to be incomplete, should apply for the Notices which are missing to:—The Secretary (D.D.A.T.), Air Ministry, Kingsway, London, W.C.2.

1920.—1, Explanatory statement; 3, Streamline wires; 4, Safety belts and harness; 5, Control pulleys and running cables; 8, Fitting of ballast in aircraft; 9, Defects in aircraft timber; 10, Foreign matter in petrol systems; 11, Strength of control cables; 12, Avro 504 and 536 type machines—Upper shoe fittings for engine diagonal strut (Part 100); 14, Beardmore engines 120 h.p. and 160 h.p.—Water pipe, Part 11358/12 B; 15, Siddeley Puma engines—Disuse of high compression pistons; 16, Renewals of licences—Complete sets of Notices necessary.

1921.—1, Interplane and centre-section struts—Rotting in lower sockets; 2, Top overhaul of engines after storage; 3, Rolls-Royce Eagle engines—Fitting of epicyclic gear; 4, Le Rhône engines (80 h.p. and 110 h.p.)—Weak valve rocker support; 5, Dual control in passenger aircraft; 6, Throttle control for Napier Lion engines; 7, Over-tightening of bracing wires; 8, Painting over inspection stamps; 9, Bristol Tourer and Bristol Fighter aircraft—Aileron control pulleys; 11, D.H.4 and 4A aircraft—Fuselage wiring plates.

1922.—1, Maintenance of A.V.8 and A.V.12 magnetos; 2, Avro 504K type aircraft—Gravity tanks; 3, "Petroflex" tubing and jointing; 4, Bristol Tourer and Bristol Fighter aircraft—Aileron controls; 6, Rebalancing of propellers after retipping or repainting; 7, Repair or overhaul of licensed aircraft—Approval of materials; 8, Flexible rubber connections in aircraft; 10, Napier Lion engines—Engine bearer clearances; 11, Rolls-Royce Eagle VIII engines—Friction anchorage; 12, W/T installation and earth system in aircraft—Standard requirements.

1923.—1, Watford C.6 type magnetos; 2, High tensile steel fork ends A.G.S. 168 to 178, and High Tensile Steel Turnbuckles A.G.S. 138 to 149; 3, Napier Lion engine valves and seatings; 4, Napier Lion engines—Precautions; 5, Maintenance of AV.8 and AV.12 type magnetos—Amendment of No. 1 of 1922.

1924.—1, Air Navigation (Consolidation) Order, 1923; 2, Engine control switches on aircraft fitted with dual control; 3, Periodical internal inspection of fabric covered components; 4, Standard straining cord in aircraft; 5, Aluminium soldering of blow-holes in aero engine castings—Precautions; 6, Engines in civil aircraft—Running speed; 7, Avro 504K type aircraft—Lift wire fittings; 8, Bristol F.2.B and Bristol Tourer type machines—Strengthening of I section spars; 9, Avro 504, 536, 548 and 552 types aircraft—Drilling of main plane spars; 10, Inspectional markings on aircraft and/or aero engine details and components.

1925.—1, D.H.4, D.H.9 and D.H.9A types of aircraft—Construction of main plane spars; 2, "Petroflex" tubing.

By Command of the Air Council,

(Signed) W. F. NICHOLSON.

M. Santoni's Move.

His many friends in England will be interested to hear that Mr. D. Lawrence Santoni has severed his connection with the Chantiers Aero-Maritimes de la Seine (C.A.M.S.) and is devoting his attention to the Compagnie Generale de Constructions Aeronautiques, which he founded in 1921 as a technical bureau for the development of aeronautical, mechanical and naval construction work, at 72, Rue la Boetie, Paris.

He is now starting the manufacture of his own type of machines, which will be known as the Avions and Hydravions "L.S." They will include both commercial and military seaplanes and land machines, as well as passenger and postal machines of all types.

The good work Mr. Santoni has done both during and since

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the War in the development of French seaplanes has recently been acknowledged in the French Official Gazette of Apr. 17, in which appears the following notice :—

Santoni, D. Lawrence, sujet Italien, Ingénieur, Administrateur-Directeur-Général des Chantiers Aéro-Maritimes de la Seine : après avoir rendu des services signales pendant la guerre, a prêté le concours le plus précieux a l'hydraviation française.

When one considers the work Mr. Santoni did in developing the Savoia flying boats in Italy and the C.A.M.S. boats in France one can well believe that he has lent the most precious help to French hydraviation. One wishes him continued success in his future efforts.

The Fairey Sports Club.

The fifth annual dinner of the Fairey Social and Athletic Club was held on Apr. 24. The Chair was taken by Mr. C. R. Fairey, who was accompanied by Mrs. Fairey, and supported by Lt.-Col. Vincent Nicholl, D.S.O., D.S.C., Major T. M. Barlow, Capt. N. Macmillan, Mr. C. E. R. Osman, Mr. W. Broadbent, Mr. A. Amos, Mr. A. C. Barlow, Mr. A. J. Toms, and Mr. G. C. Owers (Gen. Sec.).

Mr. Fairey in proposing the toast of "The Club" said how pleased Mrs. Fairey and he were to be present once more at the Club's Annual Dinner, and referred to the favourable position the Aircraft Industry held in these trying times. They had worked under different Governments and it did not matter which party was in power, all were determined that as far as this country was concerned they would not be satisfied until our Air Force and Defences were brought up to modern requirements, and that when we had got through all our troubles and times became normal once again the Aircraft Industry would be as great a factor in peace as it had been in war.

He congratulated the Club and the General Secretary, Mr. G. Owers, on the records of their past season's work and stated amidst applause that he and the Directors would in the future as in the past take the greatest interest in the Club's different activities. They were going to have a pavilion erected this year and also a hard tennis court laid down. The present canteen would be replaced by a modern structure with dressing rooms and other improvements added.

He asked all present to rise and drink to the toast "The Club" and coupled with it the name of the General Secretary, Mr. G. Owers, whose work on behalf of the Club was greatly appreciated by all concerned. The toast was carried with great enthusiasm and the General Secretary in reply thanked Mr. Fairey and all present for the cordial way in which the toast was received and gave the season's records for the Cricket, Football and Tennis Sections, also on the Social side referred to the popularity of the Fairey Dances. Their latest venture, the formation of a Dramatic Society, and their first appearance at the Park Theatre, Hanwell, had received hearty support and they were to be congratulated on the success of their first effort.

About 140 members were present at the Dinner and Mrs. C. R. Fairey present the prizes and medals to the winners in the various sections.

PERSONAL NOTICES.

Deaths.

BARBER.—On Apr. 18, in the Beled Sinjar area, Iraq, in the course of air operations, AC. Edward Barber, R.A.F.

HAMILTON.—On Apr. 20, at "Accra," St. Mark's Hill, Surbiton, suddenly, of heart failure, Lt.-Col. Hamilton, late R.A.M.C. and R.A.F., M.D., M.R.C.S., L.R.C.P., son of the late General William Conrad Hamilton, late Punjabi Rifles, and dearly loved husband of Florence Caroline Hamilton.

PONTIFEX.—On Apr. 18, in the Beled Sinjar area, Iraq, in the course of air operations, Rupert William Pontifex, Flg. Off., No. 6 (Army Co-operation) Sqdn., R.A.F.

Mr. Pontifex passed out of Cranwell, where he was Flt. Cadet Under-Officer and Captain of the Cricket XI., in December, 1921. In April, 1922, he was posted to No. 14 Sqdn., Palestine, and on Dec. 31, 1923, he was posted to No. 6 Sqdn, now stationed at Mosul. He was promoted to the rank of Flg. Off. in June, 1923.

Forthcoming Marriage.

NICHOLLS—FAIRHOLME.—The engagement is announced between Flg. Off. William Graham Nicholls, R.A.F., only son of Mr. and Mrs. Thomas Nicholls, of Broadwindsor, Dorset, and Mary Ellen, younger daughter of Mr. George Fairholme, C.M.G., late of the Foreign Office, and Mrs. Fairholme, of 80, Drayton Gardens, S.W.

Marriages.

ANDREE—PETERSSON.—On Apr. 12, at the Amirilitet's Church, Karlskrona, Gösta Emil Andrée, Pilot-Aviator, and Greta Elisabeth Petersson, daughter of Mrs. Petersson, Polhemsgatan, 12, Karlskrona, Sweden.

CRIPPS—McKENNA.—A marriage has taken place between Flg. Off. S. T. B. Cripps, D.F.C., R.A.F., son of the late Mr. S. B. Cripps, of London, and Mrs. S. B. Cripps, of Villa Léonie, Boulevard Carnot, Nice, and Miss Margaret McKenna, eldest daughter of Dr. W. J. McKenna and the late Mrs. W. J. McKenna, of St. Judy, Bodmin, Cornwall.

DORMAN—STEPHENSON.—The marriage between Geoffrey Dorman (late R.F.C. and R.A.F.), only son of the late Mr. C. H. Dorman and Mrs. Dorman, of 35a, Crystal Palace Road, Sydenham, and Leslie Muriel Stephenson, younger daughter of Mr. and Mrs. E. M. Stephenson, of 20, Crystal Palace Park Road, Sydenham, took place at St. Bartholomew's Church, Sydenham, on Apr. 25.

Births.

BETHELL.—On Apr. 21, at Andover, the wife of Sjt.-Maj. H. E. Bethell, R.A.F.—a son.

THOMSON.—On Apr. 10, at Officers' Married Quarters, R.A.F. Station, Netheravon, Wilts., to Phyllis, wife of Flt. Lt. G. I. Thomson—a son.

WOOD.—On Apr. 10, at 25, Castle Hill Avenue, Folkestone, to Joyce, wife of Anthony Wood, R.A.F.—a son.

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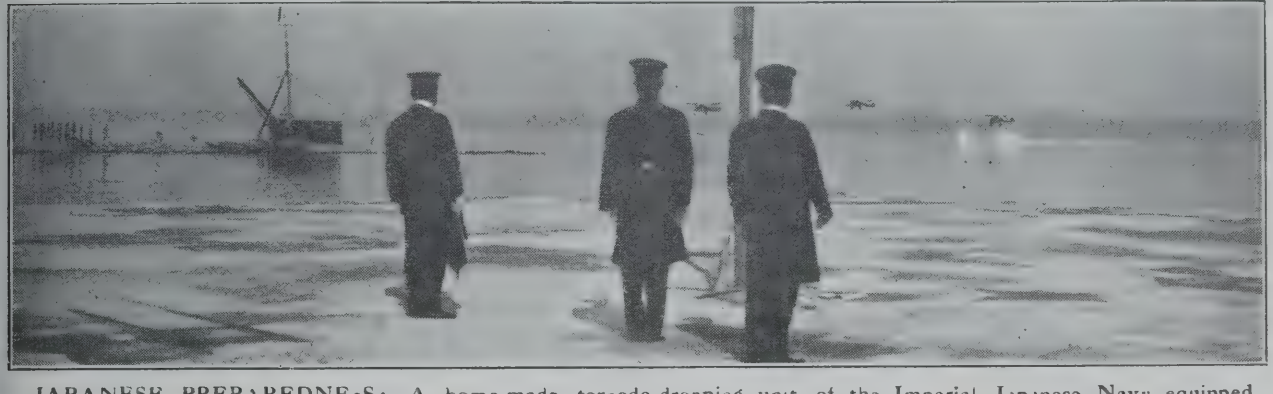
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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

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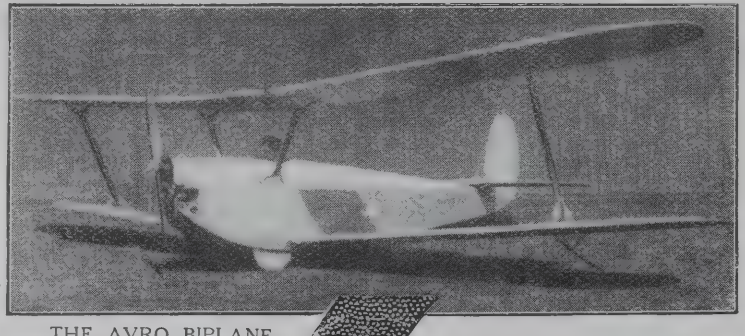
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ON AVIATION AT CAMBRIDGE.

On Apr. 29 Air Chief Marshal Sir Hugh Trenchard, Chief of the Air Staff visited Cambridge and delivered an address to the University at large in the Union Society's debating hall. The occasion was one of considerable moment in that not only was it the first occasion on which a highly-placed officer in the Royal Air Force has addressed the University but because it was the first time the University had had placed before it a clear statement of the functions of the Royal Air Force and because towards the end of his address Sir Hugh announced the proposed formation of a Cambridge University Air Squadron which will undoubtedly in due course bring the University very closely in touch with the R.A.F. and ought ultimately to have very considerable effect on Civil Aviation throughout the British Empire.

The visit had been arranged by the Cambridge University Aeronautical Society, the President of which, Flt. Lt. E. L. Howard-Williams, M.C., R.A.F., is to be congratulated on having made Sir Hugh's visit so well known in the University that the attendance came very near breaking all records for the Union. It is said that more people managed to squeeze into the hall when Mr. Winston Churchill delivered his address there, but as something like 150 people were turned away from the door on this occasion it is difficult to know where a greater number managed to stow themselves.

Before delivering his address Sir Hugh was entertained at dinner by past and present officers of the R.A.F. at the University when some 40 people including guests were present. After dinner Flt. Lt. Howard-Williams, as President of the C.U.Ae.S., proposed the health of the Air Chief Marshal, who in his reply admitted that he felt nervous about addressing the University.

At the meeting the chair was taken by Mr. J. W. G. Sparrow, of Trinity Hall, the President of the Union this term. Incidentally one may remark that the last time one heard Mr. Sparrow speak was from the stage of a vast hall at Washington, D.C., when he together with two other members of Cambridge University took part in a debate with three members of the George Washington University and defeated them very completely by the votes of the audience. One forgets what the subject was but the audience contained a very large proportion of women who appeared to be strongly influenced by the suavity of the Cambridge manner.

The Address.

In opening his address Sir Hugh said that this was his third visit to Cambridge but it was the only occasion on which he had spoken. On the first occasion, in 1920, a few officers formerly of the R.A.F. had given him a dinner. The next occasion was in 1922 when he had the great honour of having the honorary degree of LL.D. conferred upon him. He had always appreciated the honour enormously as he was very unlearned and felt that perhaps no one who had failed in so many examinations as he had had been given that great distinction. The third occasion was that night and he found himself faced with the brains of England's future and perhaps of the Royal Air Force and Civil Aviation. He explained that he was not an orator any more than he was a writer and that he would probably finish and sit down and think a lot of things that he meant to say, but, he said, he could always talk to people who were paid to listen to him and who were afraid to let their attentions wander.

Sir Hugh said that he did not look upon flying as altogether a blessing. It might be more of a blessing for this Empire than for any other country in the World but he felt that all the good it would do in civil life could not balance the harm that it might do in war. It was a far more harmful weapon of war than any other and therefore though he would touch on technical and civil aspects of flying he must necessarily deal with the Service aspect. He regarded the civil side as being the asset or credit side of the balance sheet and the Service side as the liability or debit side.

The Organisation of the Air Force.

He then proceeded to deal with the general organisation of the Air Force. This organisation is of course familiar to nearly all readers of The Aeroplane but it may be just as well to reiterate it for the benefit of those who are only now beginning to take an interest in flying. Sir Hugh explained the state of affairs thus :—

The Air Force is divided into three distinct parts, the first of which is again sub-divided.

The first is the air service which is responsible for defence against invasion. This is divided into (A) Home Defence and (B) the Defence of the Empire as a whole.

The second part is that which is now called the **Fleet Air Arm** and is that part of the Air Force which works **with the** Navy and is ancillary to the Navy. It is a very **necessary** adjunct to the proper performance of naval operations.

The third part is that which is required to operate with the Army in the Field.

In these two latter divisions there is a large number of naval and military officers seconded to the Air Force to work ultimately as pilots with their own Services.

The part of the Air Force responsible for the air defence of these islands necessarily has to have assistance from the Army in the form of guns and searchlights. This Home Defence Force consists of defensive aeroplanes and offensive aeroplanes. The defensive aeroplanes are at present single-seaters and will probably remain so. Their duty is to attack any enemy which attempts to invade this country by air. The offensive aeroplanes are day bombers and night bombers.

Sir Hugh said that he was sometimes asked why we did not use only defensive aeroplanes. His answer that if you play football against an opposing team your object is to win. If the opposing team attacked and your own team were told only to defend their own goal they could not possibly win the match. Equally if your own team were told to attack and not to defend one of the opposition might get through and find a open goal. Therefore a certain number of defensive squadrons were necessary for the moral of our own people.

Although it was necessary to have some defence in order to maintain the moral of our own people it was far more necessary to lower the moral of the enemy's people, for nothing else could finish the war. Sir Hugh suggested that his audience could imagine for themselves what would happen to this country if it were attacked from the air and we had no adequate means of defence if they would consider that in one day more tons of bombs could be dropped in this country than were dropped on it in the four years of the recent war.

Offence and Defence.

At this point Sir Hugh delivered a dictum which deserves to be regarded as an article of faith by all concerned with air war. He said that the aeroplane is the most offensive weapon that has ever been invented but that it is a shockingly bad weapon of defence, and yet it is the only defensive weapon against the aeroplane that has yet been discovered. Further he said that even in these days of great scientific improvements and inventions he doubted whether any other defensive weapon would take its place for another hundred years.

He explained that the aeroplane is not an easy weapon to use defensively. It is easy to see an enemy aeroplane from the ground if the clouds do not intervene and one's attention is drawn to it by the noise but you cannot hear another aeroplane when in your own. Also when on the ground you have only to look up to see an enemy machine but in the air you have to look both up and down.

Also the aeroplane has blind spots. And furthermore the sun is a great handicap to defence, for the enemy can get "into the eye of the sun." Still further, a defensive single-seat aeroplane can be attacked from many quarters at once whereas in defending itself that aeroplane can do no more than reply to one attacker at a time.

Casualties and Replacements.

Before leaving the subject of Home Defence Sir Hugh drew attention to the great problem caused by the fact that in the first clash of opposing forces the casualties would be very high and replacing from reserves would be very difficult. To make the point more understandable Sir Hugh asked the audience to suppose that the two forces consisted of, say, 100 aeroplanes apiece. Within a month at the ordinary war rate of wastage this figure would drop to something like 20 or even 10 aeroplanes. How were these casualties to be replaced?

In the first month they would have reserves of both pilots and machines, but beyond that there could be no reserves simply because of the enormous expense of maintaining them in time of peace. So the two forces would go on fighting each other on the basis of 20 machines instead of 100 until one side or the other could re-equip itself with pilots and machines and whichever did so first would probably win the war.

That, said Sir Hugh, was where the University came in. The brains of the University might conceive and develop machines so that the output after the outbreak of war could be rapidly increased and for that to be done on an economical basis the construction of the machines and engines must be made more simple. He recommended the members of the University to apply their minds in the future to this problem.

He reminded them again that in time of peace the wastage of machines was about 30 per cent. per *annum* while in war it was in the neighbourhood of 80 per cent. per *month*. Consequently if we kept six months' wastage at war rates most of the machines would die of old age without ever having been flown, and the waste of money would be gigantic.

He said that pilots were not quite so difficult to manufacture but there was difficulty in that direction too. Here again, he said, the University came in, for they hoped to form an Air Squadron at Cambridge so that some of the successors of the present men at this great University might be ready to take their place in the Air Force if this country were ever called upon to face an attack from the air.

This announcement by Sir Hugh Trenchard is of very great importance. He referred to it more fully at the end of his address and therefore one refrains from comment till that section of the address is reached but one would ask readers to remember that this statement was the first announcement of what may become a very important movement.

The Need for Men.

Thereafter Sir Hugh dealt with the general Home Defence scheme of the R.A.F. and said that they had room for good men of all sorts of types, the pilot, the engineer, the dashing motor driver, the literary man (particularly in his own office, he said) and the scientific man. He explained that the auxiliary squadrons were on the lines of the Territorial units of the Army and would be run by County Associations near the great industrial centres where a man who was good in the workshops could quickly become a good Air Force mechanic.

Explaining how quickly a good mechanic can take to aeroplane work Sir Hugh told a little story of how in the early days of the War 1914 a very skilful fitter came and joined up at Farnborough, where he (Sir Hugh) was then in command. Next morning he saw the man in uniform and took him to be a rigger and told him to rig a Henry Farman which was lying in parts on the ground, and gave the man the blue print which showed the aeroplane rigged to scale. The man got to work and rigged the machine and it flew successfully, though, as the pilot said, rather peculiarly. That man had had no experience as a rigger but he was able to read a blue print.

In another case two new types of engines arrived from France and refused to run. He handed them over to two good mechanics fresh from civil life and they had both engines running within a few hours.

An Interpolation.

Here one may perhaps be permitted to interpolate the remark that though undoubtedly first-class shop-trained mechanics can become excellent air mechanics very quickly the danger of the Territorial Home Defence idea is that if it becomes very popular and first-class mechanics rush to join it those men will be put into uniform immediately on the outbreak of war and the factories in which they happen to be working will be deprived of their services. The question is whether first-class mechanics ought to be put into the Services at the beginning of War or whether they ought to be left at home to increase the output of war material.

Those who remember the early days of 1914-15 will recall how thousands of our very best workmen, being keen and intelligent young men, rushed off and enlisted and got themselves killed in the trenches while the wasters who remained at home became qualified Trades Unionists. In some cases employers had to work hard for a year or more to get back into their factories men of the very highest value who in the meantime were merely sitting in a trench trying to keep themselves warm.

Obviously the proper thing to do in a really first-class war is to conscript the whole population, men, women and children, and tell off each person to the job for which he or she is best fitted. And in that case one fancies that the first-class mechanics would remain in the factories. Engines and aeroplanes and gadgets in the R.A.F. are already so far standardised that any moderately intelligent mechanic can keep them in running order with a few weeks' training.

Empire Defence.

Turning to the Air Defence of the Empire Sir Hugh defined the word Empire as meaning "our territories and our trade." He pointed out that the greatest asset to our trade was the fact that we had friendly ports in which our merchant ships could take refuge either from an enemy or from weather.

He said that if there were aerodrome suitably arranged in each of our overseas territories even though they cost a few millions they would save money. There was no need to tie squadrons to every spot in the British Empire to defend it.

So long as there were the facilities and arrangements for it, the actual unit itself would become very mobile. Sir Hugh said "It will be still more mobile when the great air craft carriers of the future—airships—come into being."

The C.A.S. and Airships.

Here again we have a vitally important statement by the Chief of the Air Staff. Hitherto everybody concerned with airships has regarded Sir Hugh as being the arch-enemy of the gas-bag brigade. Only those who can claim to have some knowledge of the methods on which Sir Hugh works have been able to understand that so far from being the enemy of airships he has been in fact the airship's best friend.

When the Government, assisted by the ineffable Geddes and his little axe cut down expenditure ruthlessly the Air Ministry had barely enough money to keep the Air Force alive and to run our little air wars in the Middle East. Consequently there was no money for airships.

Spending a little money on airships would only have been throwing money away. Consequently the only reasonable policy was to spend no money on airships and to let other countries go on experimenting till we could afford to spend money on an adequate scale.

The laying-up of our airships was purely a matter of money. But all the time Sir Hugh was perfectly aware of the real value which airships will have when they are properly developed. And here we have his confession of faith, namely, that the airship will become in future the real aircraft carrier.

This statement is of still more importance when one considers it in relation to the Navy's policy and the working of the Naval mind. If the Navy obtains complete control over its own air service, as it seems likely to do in due course, it will mean that all sea-borne aircraft carriers will be entirely subordinated to the requirements of the Fleet as imagined by senior Naval Officers, regardless of the needs of the Royal Air Force as such throughout the Empire.

Therefore it will be very well that the Air Force shall develop its own aircraft carriers in the form of airships so that it may conduct its own wars throughout the World entirely independently of the Navy. One sees in this the great hope of the salvation of the Empire in the future.

Economics and Technics.

Continuing, Sir Hugh said that the great problems of the World were economic and that if the Air Force could not carry on the defence of the Empire as cheaply, or even more cheaply, and as efficiently as the older Services had done for hundreds of years past then there was no justification for the Air Force. If, as he claimed, the Air Force could defend the Empire more economically and as efficiently as the other Services then anyone could see the chances which were open in the R.A.F., with our Empire situated as it is.

Turning then to the technical side Sir Hugh said that one of the great principles to which he had adhered was that every pilot must understand his engine and aeroplane at least as well as an owner-driver who did not keep a chaffeur understood his car. Since the War it had been difficult to give sufficient education but he felt that in another five or ten years' time every officer would know enough about his machine to keep it in running order. Until that stage was reached we could not develop the Air Service to its utmost extent because it would be too expensive.

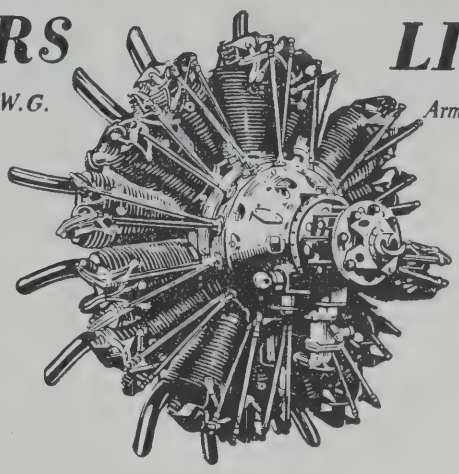
This remark by Sir Hugh opens up the immense question of the engineering side of the R.A.F. The question is whether every officer shall be an engineer within his own personal limits or whether there shall be a distinct engineer corps or engineering department in the R.A.F. on whom will rest the responsibility for the airworthiness of machines which may be flown by pilots who are entirely ignorant of mechanical matters. Something has already been said in this paper on the subject and one hopes to return to it in a future issue.

The Humanity of Air War.

Thereafter Sir Hugh discussed the humanity of action from the air against an enemy people. He pointed out how a small air raid lasting a day or even less on a troublesome tribe might kill perhaps twenty or thirty of the tribe and perhaps a couple of pilots on our side, whereas operations on the ground without the help of the Air Force would mean a punitive expedition lasting for perhaps six months and causing

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five or six hundred casualties among the enemy and perhaps a hundred among our own people.

There was no incentive to a tribe to fight unless there was some prospect of their getting loot. Sir Hugh's words were :—" Those of you who bet, which I hope you do not, would not mind betting me half-a-crown if you had a chance of winning my half-crown, but I am certain that none of you would bet sixpence with me if you had no chance of winning my sixpence and I had a chance of winning yours.

" What I mean is that these semi-civilised tribes do not mind going out to fight and chance getting a knife into their stomachs if there is a chance of getting their knife into your stomach and stealing your boots, but they will not fight if there is a chance of getting a knife in their own stomachs and no chance of getting their knife into someone else's. Therefore air operations are a deterrent to war."

He pointed out how in Iraq and India the air was increasingly proving its value and tribes were coming in and making submission for wrong-doing which in the past had meant punitive columns with vast expenditure in money and lives.

Trade Routes and Air Patrols.

As to the use of air power in the defence of our territories and trade Sir Hugh said that if they would study the trade routes of the World they would see how close they ran to the shore. He recalled that submarines brought us to the verge of disaster in the last war by attacking our trade near our ports or near shore. Merchant ships under air convoy in narrow waters were less vulnerable to submarine attack than elsewhere. No doubt the Navy had a great part to play but he asked his audience to think whether the Empire did not lend itself to protection by air of our trade and also for attack on anyone else's trade.

Further he said that nearly all naval battles of the past had been fought close to the shore, in fact he did not think that any had been fought 100 miles from shore in the past 250 years. He asked his audience to consider what would be the effect of air power under these circumstances.

Guns of great range had been installed but now they could only fire blindly unless they had aeroplane observation. The bombarding ship was hull down to the port which it bombarded, therefore the shore batteries could not shoot at the ship. And when an aeroplane went out to see where the ship was the ship could steam out of range until the aeroplane had to go back.

Was it not therefore better to attack with the aeroplane? It might not be able to sink ships but it could damage ships 250 miles out at sea and thus prevent bombardment instead of using counter-bombardment. He did not want his audience to think that the air would prevent all bombardment but it might act as a great and very economical deterrent.

He said that the present development of air power might be compared with that of gunnery before the South African War. Personally we should have vastly improved bomb sights which would make bombing far more accurate than the fire of a gun at 40,000 yards. When one considered all the mechanical errors of a gun and the various atmospheric conditions through which a big shell had to pass, a bomb from an aeroplane at 10,000 feet would be more accurate.

On the subject of accidents Sir Hugh pointed out that though the number of flying accidents might increase they were considerably less year by year in proportion to the number of miles flown so that actually flying was becoming safer.

Sir Hugh then proceeded to tell the University how its members could join the Air Force with Short Service Commissions for five years and in that five years not only become efficient aviators but actually improve their education in whatever branch of science they might like to study.

The Cambridge Squadron.

Then Sir Hugh made the announcement that the Air Ministry was anxious to start Air Force units at Oxford and Cambridge and that they hoped to do the same at other Universities at a later date. A rough outline of a scheme for the formation of an Air Force Squadron at Cambridge had been drawn up thanks to the assistance of the member for the University, Sir Geoffrey Butler, and with the advice and encouragement of the Vice-Chancellor together with the President of the Board of Military Studies, General Costello, and many senior members of the University.

Sir Hugh's statement was as follows :—" This Air Force Squadron which, during term time, must be mostly kept alive by means of courses of instruction in engines, rigging, wireless, etc., and by lectures, with possible flying as observers at Duxford or some other Air Force station, if the Universities will allow this, and with further flying during the long vacation, will, I trust, be the means of stimulating interest in the air as a whole at the University. And I hope that the interest will be continued after members have gone down from the University and gradually throughout the country.

" It is impossible for me to say definitely when this unit will be formed but I hope for October this year. Anyhow, when it is formed I feel sure that I may count on the backing of the members of the University and the undergraduates to make the movement a success and that they will do all in their power to impress on the nation as a whole the value of this arm."

Sir Hugh's speech was received with acclamation. A vote of thanks was proposed by Professor Inglis and seconded by Professor Melville Jones, and Mr. Sparrow the President declared the meeting adjourned. Thereafter Sir Hugh and the organisers of the meeting retired to an upper chamber in the Union building where a number of graduates and undergraduates of the University came and asked questions for quite a considerable time.

An Editorial View.

There is no doubt that Sir Hugh Trenchard's visit to Cambridge will have far-reaching effects. Hitherto the authorities of our older Universities have been definitely hostile to flying. Standing as they do *in loco parentis* to the men of the University one can easily understand that they have a rooted objection to undergraduates or even graduates breaking their necks in any way which can be prevented by the authorities at the University. And as flying seemed the most obviously break-neck form of sport Civil Aviation has not flourished in our seats of learning.

Cambridge being the more modern University, in its mental attitude if not in its actual foundations, has at any rate awakened to the extent of having a Chair of Aeronautics and a University Aeronautical Society of its own. Oxford despite its greater devotion to The Humanities still remains officially blind and deaf to the psychological and imperial importance of aviation. Even unofficially the graduates and undergraduates of the University have taken no collective interest in flying. Therefore to Cambridge must always belong in centuries to come the credit of being the senior University in aeronautical affairs.

No doubt Oxford will ultimately develop aeronautics further than Cambridge will do, much as Oxford adopted expansive trousers from Cambridge and by making them still more expansive acquired the fame or notoriety of having invented them. But centuries hence when some antiquarian turns up bound volumes of The Aeroplane in the course of historical research one hopes he will come across this definite statement of Cambridge's priority.

The idea of a Cambridge Air Squadron is one which is much to be commended. No official announcement has been made about it other than in Sir Hugh's speech but one gathers that the idea is to teach people at the Universities as much as possible about the practical side of flying without committing them definitely to joining the R.A.F. Reserve or the Auxiliary Air Force.

This idea is thoroughly sound. There are in this country many thousands of young men who would like to learn to fly, but whose circumstances are such that they cannot possibly afford to join a Reserve or Territorial Unit. They are men who have to earn their own living and have possibly only two or three weeks' holiday in the year, and they cannot for various reasons devote the whole of that holiday to the Service. In the event of war these men would rather join the Air Force than either of the other Services and if only they could be taught to fly and to understand aircraft without any liability of service except on the outbreak of war then we could undoubtedly get very great numbers of young men to learn to fly.

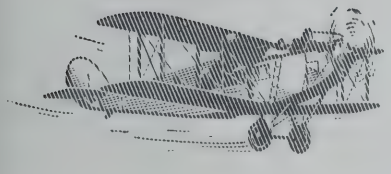
The light aeroplane clubs about which so much has been written and so little has been done during the past year or two are a move in this direction. But one would like to see



THE C.A.S. AT CAMBRIDGE.—Left to right,—Wing Cdr. Bradley (O.C. Duxford), General Costello, Sir Hugh Trenchard, Flt. Lt. Howard Williams (President of the Cambridge University Aeronautical Society), Professor Inglis, and, on the extreme right, Professor Melville Jones.

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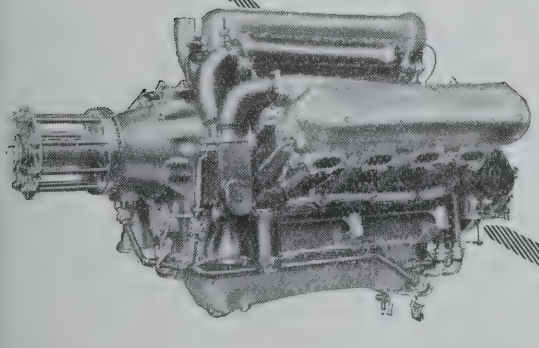
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these University Air Squadrons come into being even before the light aeroplane clubs.

In the first place the University man is the type which the Air Force needs among its officers. The University man is at any rate taught how to learn and has a better all-round understanding of men and affairs than has the man of his own age who is tied down to some specific business.

Also there are congregated at the Universities and therefore easily accessible a quantity of young men with natural sporting instincts who can presumably be more easily persuaded to go and fly than young men in communities which are more definitely devoted to commerce. And furthermore the Universities undoubtedly set the fashions for the young men of the nation and if the Universities take to flying then flying will become popular.

Therefore one hopes that the Air Ministry will concentrate as soon as possible on the work of starting these University air squadrons. If run in conjunction with neighbouring R.A.F. stations they should cost very little to establish and operate.

Altogether Sir Hugh Trenchard's address deserves to be regarded as marking a step forward in the history of British Aeronautics. By thus establishing direct touch with one of our older Universities the Chief of the Air Staff has struck out on a new line of development for the Royal Air Force. All will hope that not only Cambridge but the other Universities will grasp the opportunity which is now offered to them of assisting the science and practice of Aeronautics on which the future safety of the British Empire so greatly depends.—C. G. G.

The Royal Academy Banquet.

At the Annual Banquet of the Royal Academy at Burlington House on May 3, the Earl of Cavan, Chief of the Imperial General Staff, replying for the Army to the toast of the Imperial Forces, said that no man need be discharged from the Army ignorant of a trade, but the education of the officers lay greatly with themselves. He said that he dreamed of a time when it should be allowable for a commanding officer to make a grant from the annual training allowance to a couple of young officers of his unit to travel every year. He thought the Army would reap a great reward in expanded vision and keener interest. Tours of the Empire could come later to those who had fitted themselves for the privilege. At the end of his speech Lord Cavan said :

"Above all, we must realise the imperative necessity for co-operation between the three fighting Services. The forces of the land, air, and sea must act in organic unity; they were three members of a team, and as long as they worked as a team they would be a bad combination to tackle. Each was essential to the other, and any exaggerated claims of what one could do alone without the others could not be too strongly deprecated."

Sir Samuel Hoare, Secretary of State for Air, said :—

I am grateful to you Mr. President for having once again included the Royal Air Force in this toast and for once again having given me the chance to thank you on their behalf. The Officers and Men of the Royal Air Force deserve the admiration of us all and I am glad to think that year by year the vital value of their work is being better realised by their countrymen.

This evening I am in the fortunate position of being able to testify at first hand to the fine achievement of the Force in distant lands. For it was only late last night that the Secretary of State for the Colonies and I returned from a journey in which, during the space of the Easter recess, we have travelled 3,500 miles by air and visited from end to end the territories that we now administer from the Mediterranean to the Persian Gulf. Within the sphere of influence of the British Empire there are no countries better suited than these for testing the efficiency of the Air Force and for proving the great value of air power for Empire defence and the development of Empire communications.

As to Empire defence, we found Iraq (a country 800 miles in length) controlled from the air by eight squadrons of the Royal Air Force and, in spite of its turbulent record for a thousand years, enjoying a greater tranquillity than it has experienced since the days of Haroun-al-Raschid. The Secretary of State for the Colonies will, I know, be the first to acknowledge the fact that but for the efficiency of the Royal Air Force the splendid work of the British Civil administrators would have been impossible.

As to the use of air for Imperial communications, let me point as an example to the journey that we have just completed. I have noticed it described as an adventurous journey. I have been offered kind congratulations upon my safe return. The journey, thanks to the efficiency of the R.A.F., was no more adventurous than a journey by land or sea, and, whilst I appreciate the congratulations of my friends, I can assure them that I am no more entitled to them than I should be after a long tour by train, or ship, or motor. That the air is becoming a great Imperial highway is shown by the fact that in a few weeks we have made by air a journey which would otherwise have taken 12 months. We have traversed Iraq from end to end, we have visited the mountains of Kurdistan and the Persian Plains, through which the British pipe-line brings oil for the use of the Fleet, we have stayed in Trans-Jordania, Palestine and Egypt, and have had the opportunity of inspecting almost every British activity, military and civil, in these distant and often inaccessible countries. A long and varied but not an adventurous journey, for British pilots, British machines and British organisation enabled us to perform it without risk and even without delay or incident.

In this assembly are gathered many men of long views and vivid imagination. Let them picture to themselves the striking contrasts of this journey, the ruins of past ages, empires and religions—of Ur, of the Chaldees, of Nineveh and of Babylon on the one hand, and, on the other, the throbbing motors of our machines, the keenness, the courage and the drive of the British pilots of the era of to-day.

Let them picture to themselves the scenes unique in our political history, in which, thanks to air transport, two British Secretaries of State have, during the Easter recess, interviewed Arab Sheiks, who have seen an aeroplane before they have seen a house ' Kurdish chieftains, Assyrian hillmen, and even the chief of that curious sect, the devil worshippers, whose doctrine, somewhat cynical in theory, but harmless in practice, is to worship the power for evil on the ground that the power for good will prove propitious whether he is worshipped or not.

That two British Ministers have been able to make this journey, that they have been able to study upon the spot difficult problems of Imperial administration, that they have been able to find, as they hope, opportunities for the reduction of Imperial expenditure, is due to the efficiency of the Force whose toast you have proposed.

It is the spirit of keenness and enterprise that has enabled it to achieve so much in the Middle East. It is this spirit of keenness and enterprise that at home is building up the air defence that we need for the British Isles and the British Empire. It is this spirit of enterprise and keenness that, ready to face risk and danger, brought back the R.33 to her mooring mast at Pulham. It is this spirit of keenness and enterprise that will drive through the air a new highway for the British Empire and make our journey of no account when Ministers and traders and travellers will pass swiftly and easily as a matter of ordinary routine from one end of it to another and unite it by an aerial line of closer and quicker intercourse.

Air Force and War Wastage.

The following letter was sent to *The Times* on May 2 :—

Sir,—I note that in the course of Sir Hugh Trenchard's Lecture at Cambridge, he calls attention to the great divergence between peace and war wastage in the Air Force. He states that the peace wastage is 30 per cent. per year as against a war wastage of 80 per cent. per month, and therefore, the carrying of war reserve in peace time is so great an expense that the cost would be crippling

During 1919 when studying the question of Aerial Armaments in the light of the past war I became obsessed with the gravity of this very point for the following reasons :—

It was obvious to me then that on the Air Force of the future would lie largely the responsibility of our armed power. That further to this, without overcoming this vast difficulty of reserve, the whole peace-time cost of the Air Force would be wasted in the event of another great war. A point which if anything emphasises the need of the reserve is the fact that the material required (aeroplanes, engines, spares, etc.) is only actually used in war-time by approximately 2 per cent. of the total personnel of the force and that if this 2 per cent. are not functioning the 98 per cent. are of no greater value to the country in war than the civilian population.

It is therefore patent that the war efficiency of an Air Force hangs on the thread of an organised reserve and that any policy which neglects this point can only lead to disaster for our country.

As to the cost of the reserve being crippling, if this reserve means the life of the Air Force in war (the only reason for its existence) and means that the peace-time cost will not be wasted, surely it must be met.

Has it not a counterpart in the Navy? Are not Super-Dreadnoughts built only to be written off in a few years' time, with the one object of our certain capability of defeating any new enemy and of maintaining our country? During peace time the cost of these ships in maintenance is terrific. The same initial cost in aircraft with a far less cost in maintenance would go a long way towards guaranteeing the country a sure Air Defence.

From a deep study of this subject I realise to the full the complicated nature of peace-time organisation for dealing with war production and reserve and consider that this is essentially bound up with the correct location of factories. Even a cursory study of decreased output owing to enemy bombing makes one realise that the maintenance of aircraft factories in the S.E. of England is nothing short of a peace-time delusion and that no guarantee could be given of any output from these factories to replace the very war wastage that Sir Hugh Trenchard mentions as being highly probable during the first month of war.

In this paragraph he places other nations as being faced by the same "insuperable difficulty," to which I cannot agree, because even in the days of long range machines and even provided England holds the Seas the Continent can manufacture aeroplanes beyond our bombing limit whereas all parts of these Islands may be controlled to a more or less degree from the air.

(Signed) F. A. G. Noel
(Lately Lieut.-Col., The Royal Air Force).

Air Raids, 1914-18.

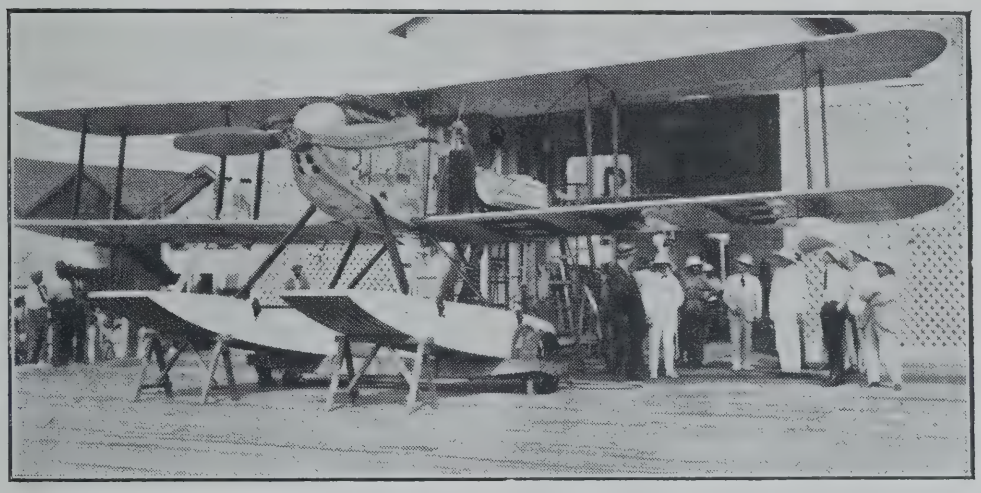
Sampson Low, Marston and Co. Ltd., who are perhaps best known to the readers of this paper as the publishers of *All the World's Aircraft*, announce that they will shortly be publishing the story of the great air raids on Britain. This has been written by Captain Morris, R.A.F., who was connected with the Air Historical Branch, which particularly qualifies him to deal with the subject. An announcement as to the date of publication and price of the book will be made as soon as possible.

British Aircraft for Australia.

The Australian Ministry of Defence has ordered four Supermarine Seagull amphibian flying-boats for the use of the Royal Australian Air Force. The adoption of the amphibian type of aircraft is due to the desire to obviate the necessity of establishing a seaplane base at Sydney.

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THE RELIABILITY OF AIRCRAFT.

By Alan J. Cobham.

[The following short article which Mr. Alan Cobham has kindly contributed to this paper, shows how flying can be made a properly commercial proposition when intelligence is used in the operation of aircraft. Incidentally one would draw particular attention to the cleverness of Mr. Cobham's own staff-work in continually re-arranging his plans to meet the various untoward incidents which befell the older and less reliable methods of transport.—C. G. G.]

On the Prince of Wales' tour to South Africa, a special staff photographer, representing the entire British Press, is attached to the suite, but this was not enough for *The Daily Mirror,* who sent their own special staff photographers on ahead, one to Sierra Leone and the other to Accra, so that when the Prince arrived they were fully prepared to get the best pictures. They departed on the first boats of call with their plates, presumably for England. Also in the mail packet on board were the photographs taken by the staff photographer representing the remainder of the British Press.

Everything in the whole scheme was kept a dead secret. Nobody in the London office knew where their own photographers had gone excepting the Chief. The scheme was arranged to have the boats' courses deviated so that they came within twenty miles of Lisbon, when the precious plates would be dropped overboard in sealed barrels, and would be picked up by tugs waiting in the open sea.

It must be understood that this would happen on two occasions, for the photographer from Sierra Leone was travelling on the *Zaria,* and the photographer from Accra was coming along a week later on the *Adda.* The tugs, having secured the barrels, would dash into port as quickly as possible, where the plates would be transported to a waiting aeroplane, which would dash to England as quickly as possible, and return again to Lisbon for the next lot of plates off the second boat, thus giving *The Daily Mirror* two scoops, for they would have the double lot of pictures three or four days ahead of all their opponents.

Thus it so happened that I left England one morning a couple of weeks ago with Elliot, as my companion, in the same old D.H.50 that went to India and back. The difficulty was to conceal from everybody where we were going. Not a living soul in the flying world knew of our destination, not even the D.H. Co. And unfortunately at every aerodrome I had to prevaricate and infer that I was going to some other destination than Portugal.

At St. Inglevert we were supposed to be going to Strasburg. At Bordeaux we were bound for Barcelona. At Burgos we were bound for Madrid, and at Lisbon we had come from Seville.

While we were waiting quietly in a Lisbon hotel, we were in nightly communication by wireless with the two steam ships, and as the first boat, the *s.s. Zaria* got later each day we were continually making fresh sets of plans to meet wit all emergencies, until at last it was decided that I should fl direct non-stop to Bordeaux, whence the pictures would g by train to London, and I should return to Bayonne and pic up the pictures from the s.s *Adda* which had been following o in the Sud Express, and then dash them on to London a quickly as possible.

In the event, the first boat arrived over a week late an the second a day early, so they came in within a few hour of each other.

As the first lot of pictures arrived on the Lisbon aero drome at 3.30 a.m. we were in the air just before dawn a 5 a.m. and flew direct non-stop, a distance by the route taken owing to the heavy rain in the Pyrennees, of over 700 miles t Bordeaux. There we landed at 1 p.m., having been in the ai for eight hours non-stop. The plates were taken on by waiting messenger to London, to Paris by train, and flow over to London early next morning.

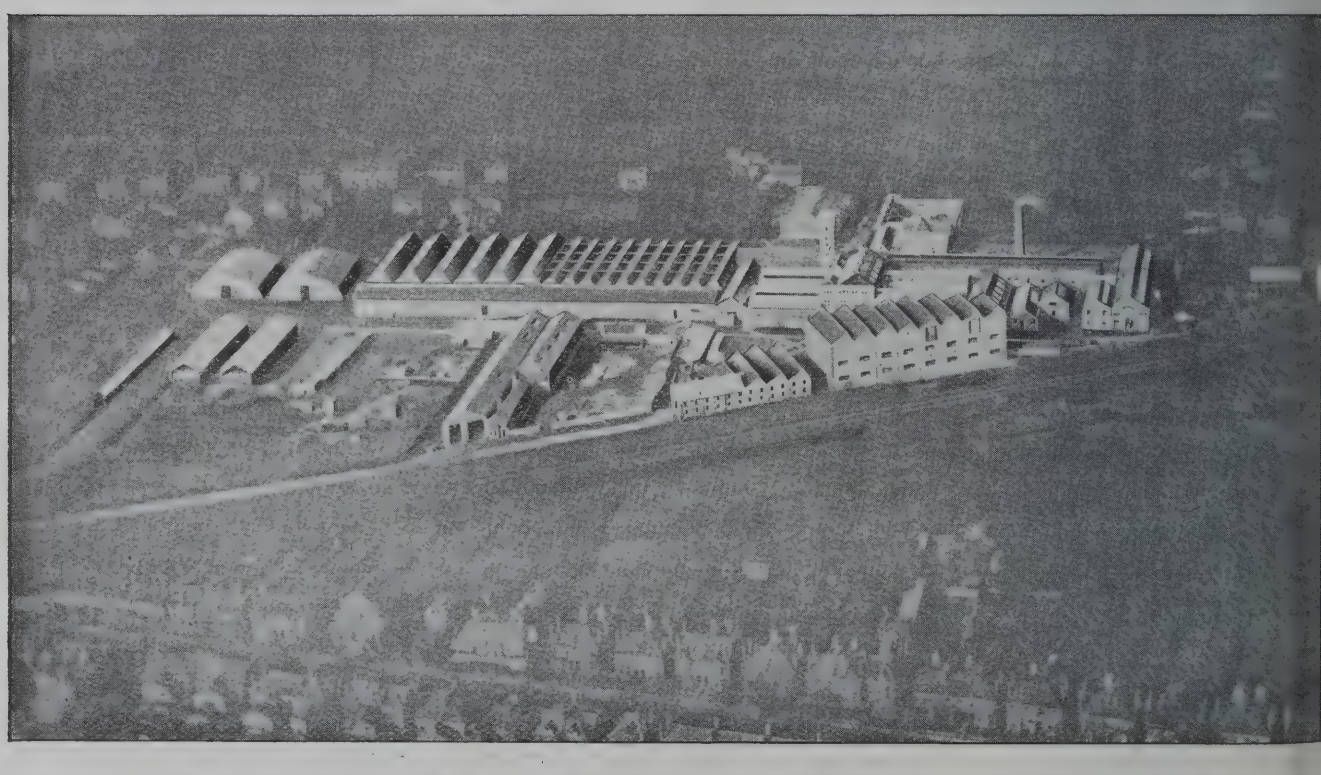
In the meantime it was impossible for me to go back t Bayonne, owing to that landing ground being in a state o flood, to meet the second lot of plates coming on the Su Express the following day. So I had to wire London an Lisbon immediately a fresh scheme for picking the plate up at Bordeaux, where they would arrive at 2.40 p.m., an endeavour to dash them to London before nightfall. Also had to make emergency arrangements in case I could no make Croydon.

At 3 p.m. next day a telephone message came through t me on the aerodrome at Bordeaux to say, "No plates o train." Half an hour later we discovered that owing to th railway engine breaking down in Portugal, the Lisbon Su Express coach had missed connections at Medina, and th coach would not arrive at Bordeaux until 2.45 a.m. nex morning.

In the brief space of half an hour I had to arrrange a entirely new scheme, by which I flew on to Tours that after noon, in readiness to collect the plates off the train whe the Lisbon coach arrived at that town the following morn ing at 7 a.m., thus making use of the train in the dark hour to get the plates further on their journey, and then dash o to London from Tours non-stop and endeavour to get th plates into the office by noon.

The only way to make certain that *The Daily Mirror* repre sentative on the Sud Express would know of these altere arrangements was to wire at least four stations *en rout* asking the station-master to give the message, thus makin sure of it. This was done and worked O.K. Also Londo had to be informed of the new scheme.

By 5 p.m. we were on our way to Tours. We got in befor



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

dark and made preparations for an early departure next morning.

I was waiting on the station at 7.30 a.m., and the train arrived on time at 7.40 a.m. The plates were handed to me before the train had stopped, and twenty minutes later, that is 8 o'clock, by taxi to the aerodrome, we were in the air and on the way to London, where we arrived by noon, everybody satisfied

This should prove one of the cases of the utility of the aeroplane, if its advantages can only be properly applied. Also it proves its reliability, for it was the only means of transport that did not fail.

The August Flying Meeting.

A Flying Meeting will be held under the Competition Rules of the Royal Aero Club and the Regulations of the F.A.I. at Lympne, near Hythe, on Saturday, Sunday and Monday, Aug. 1, 2, and 3 of this year. The following is the provisional programme.

International Handicap.—Open to all Aeroplanes. The Race is over a distance of approximately 100 miles, comprising eight circuits of the course. First Prize £150. If five starters the second will receive £50. Entry Fee £2.

Grosvenor Challenge Cup Handicap.—The Aeroplane and Engine must have been entirely constructed in the British Empire. The weight of the engine must not exceed 275 lbs. The entrant and pilot must be British subjects. The entrant must be an individual and not a company. The Race is over a distance of approximately 100 miles, comprising eight circuits of the course. First Prize £100. Second Prize £50. Entry Fee £2.

Light Aeroplane Holiday Handicap (International).—Open to Light Aeroplanes (Single- and Two-Seaters). The weight of the engine must not exceed 170 lbs. The Race is over a distance of approximately 50 miles comprising four circuits of the course. First Prize £100. If five starters the second will receive £25. Entry Fee £2.

Single-Seater Light Aeroplane Scratch Speed Race (International).—Open to Light Aeroplane (Single-seaters). The weight of the engine must not exceed 120 lbs. The Race is over a distance of approximately 50 miles, comprising four circuits of the course. First Prize £50. If five starters the second will receive £20. Entry Fee £2.

Two-Seater Light Aeroplane Scratch Speed Race (International).—Open to Light Aeroplanes (Two-seaters). The weight of the engine must not exceed 170 lbs. The Race is over a distance of approximately 50 miles, comprising four circuits of the course. First Prize £50. If five starters the second will receive £20. Entry Fee £2.

Private Owners Handicap (International).—Open to all Aeroplanes, privately owned and registered in the name of an individual. (The definition of "Privately owned" is to be at the sole discretion of the Royal Aero Club.) The Race is over a distance of approximately 80 miles, comprising four circuits of the course. First Prize £100. If five starters the second will receive £25. Entry Fee £2.

Inter-Club Race.—Open to D.H. Moths owned and entered by the Light Aeroplane Clubs. It will be a scratch race over a distance of approximately 50 miles comprising four circuits of the course. First Prize £100. If five starters the second will receive £25. Entry Fee £2 per aeroplane.

Certified Performances for Light Aeroplanes.—Single-seaters and Two-seaters. The weight of the engine must not exceed 170 lbs.

The Royal Aero Club will give Certificates of Performance in the following classes:—

Class I. Height in a given time. 30 minutes.
Class II. Greatest Speed over 3 kilometres.
Class III. Greatest Speed over 50 kilometres.
Class IV. Height.

A Prize of £25 will be given for the best performance in each Class.

Prizes will only be given in Classes where there are at least three competitors. Entry Fee £1 for each Class.

* * * *

All Races will be held over the course of 12½ miles starting and finishing on the Aerodrome.

In all cases where aeroplanes are entered as two-seaters a passenger must be carried and the weight of the pilot and passenger must be at least 340 lbs. Any shortage of weight must be made up with ballast.

Competitors must comply with the Air Navigation Regulations in force, subject to any concessions which may be made by the Air Ministry for these Races.

Where the weight of engine is specified this will include carburetter and induction system, complete ignition equipment, airscrew hub and fastenings, exhaust pipes (if any) and radiator, pipes and water (if any).

Aeronautics at Wembley.

The exhibit staged by the Air Ministry in the Government pavilion will be of an extremely complete character. It is divided into two parts, the first of which, prepared by the R.A.F., illustrates the growth of aviation and its present condition. The second section is devoted to Air Transport, and shows the progress of Civil Air Transport, with very many peeps into the future.

Forty scale models show the progress of aviation from the time of the gliding experiments of Lilienthal and Pilcher at the end of the 19th century, in chronological sequence, down to the three-engined troop-carrier, the commercial planes that traverse the World to-day, and the modern light aeroplanes. A model shows the R.A.F. station at Halton, Bucks, which includes the school of technical training for boys, and gives a good idea of the various trades which constitute the personnel of an air force squadron.

Aerial photography, which forms so important a part of modern surveying activities, is well represented. Above a model of Windsor Castle, a miniature aeroplane is made to fly. After the aeroplane has completed its course, an actual photographic plate is exposed of the castle from above.

The control of aeroplanes, their testing and inspection, are demonstrated by numerous models. In one full-sized model of the cockpit of an aeroplane, the controls are automatically put into motion. The equipment of pilots with electric-heated flying kit for very high altitudes, is also shown.

To emphasise the eternal vigilance necessary to ensure the safety of pilots in the air a fine collection of faulty metals and timbers actually taken from aeroplane factories is shown. Other interesting models show the very severe tests to which different parts of planes are put before they are allowed in the air.

"Why does an aeroplane fly?", a question which few but the initiated can answer, is fully explained by a series of models demonstrating the first principles of flying, and the action of planes in the air under varying conditions.

Aircraft armaments are illustrated by machine-guns, giant and baby bombs, and the operation of the Air Force in action is shown by a model of Wady Ferach, in Palestine, where a single squadron cut up the Turkish retreat with tremendous loss.

In the section devoted to Civil Aviation, a large-scale model of the London Terminal Aerodrome at Croydon, with the improvements now being completed, takes first place. Close by this model is another showing the commercial airship base of the future. The comfort of airship travel is demonstrated by a sectional model of the passengers' quarters of one type of airship now under construction for Imperial routes.

One of the most popular exhibits again this year, will be sectionalised, high-powered aircraft engines. This year a 450 h.p. Napier Lion, an engine of the cylinder-in-line type, and a 450 h.p. Bristol Jupiter, of the radial type, will be shown working at slow revolutions, and opened up, so that the operation of the various parts can be easily followed.

A most interesting "pathfinder" map, worked by the pressing of buttons, will demonstrate the British regular air routes throughout the world, the famous long-distance flight, the proposed Imperial airship routes, and all the regular air routes across the Continent of Europe and beyond.

Clement Ader.

By the death, at Toulouse, on May 3, of Clément Ader, at the age of 84, France has lost one of her earliest and most distinguished pioneers of aviation.

M. Ader was an engineer in the French Government Department *des Ponts et Chausées*, and took an intense interest in the flight of birds from a very early age. His first attempts in the domain of practical aeronautics took the form of man-lifting kites and as early as 1886, he began to build a power-driven aeroplane which was completed in 1890. The machine was known as the *Eole* (*Æolus*). The claim was made that it flew for some two or three feet, though that claim has always been contested vigorously.

A second machine, built immediately after the Eole, was wrecked in test, but by this time the French Government had begun to take an interest in Ader's experiments and provided funds for further trials. As the result a third machine—the famous Avion—was completed. This was a monoplane with bat-like wings, and twin airscrews, driven by a steam engine.

On Oct. 1, 1897, it was tested, with Ader on board as pilot under the observation of French military officers. On the evidence of the wheel tracks the claim was made that the Avion was off the ground for some 300 metres, after which it came to grief.

Whatever may have been the truth the results were insufficient to convince the French Government, who withheld further financial assistance and took no further interest in Ader's proposals.

Disheartened and disgusted Ader abandoned his experiments and retired to the country, where he live unhonoured until after later workers in the same field had achieved success in flying, when his work was remembered and given its due place among that of the pioneers of aviation.

An inquest held by the French Military Authorities before the outbreak of war in 1914 failed to establish definitely whether the Avion had flown or not, and the weight of evidence went to show that one wheel was always on the ground. But, in recognition of the fact that the machine did definitely lift its own weight some six years before the Wright Brothers flew in America, the name Avion was adopted as the official designation for all French heavier-than-air craft for military purposes. Hence the word *hydravion* which is used for what we call a seaplane.

Thus the name of the father of French Aviation survives in his native language, though, like so many pioneers, he received no material benefit from his invention, beyond the belated right, conferred in 1924, to wear the red rosette of the Légion d'Honneur.

"MOTH"

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

FLY NG IN SOUTH AFRICA.

On Jan. 28 a paragraph appeared in THE AEROPLANE on Flying in South Africa intimating that aviation was in rather a bad way and that the Government did not appear to be interested in it, that the South African Air Force was still using machines of the 1916-17 vintage donated by the British Government after the War 1914-18, and that the personnel of the S.A.A.F. were not at all keen on violent flying on these obsolete craft. It was also stated that when two machines were required to give a demonstration about 150 miles from Pretoria they were sent by rail instead of being flown there.

This note has produced sundry letters from people in South Africa who are genuinely keen on flying and one is very glad to be able to publish information which though it does not directly contradict the statements which appeared on Jan. 28 does at any rate put rather a different complexion on the state of affairs.

The first letter reads as follows :—

Sir :—I wish to direct your attention to the statements headed "Flying in South Africa," in your issue of Jan. 28, 1925. The information contained therein is entirely inaccurate and reads as coming from someone who has attempted to obtain a commission in the South African Air Force, and who has been turned down owing to his not coming up to the high standard set for the pilots. Numerous ex-Royal Air Force officers, alleged to have done 200 and 300 hours war flying, have been turned down as unfitted to become pilots in the South African Air Force.

Although the machines are those comprised in the original Imperial Gift and are of 1916-17 vintage, there have been no unaccountable breakages and not the slightest doubt is entertained in regard to their reliability as they are stripped down to the minutest detail and rebuilt by air mechanics who are competent to the last degree.

It will interest you to know that South African Air Force pilots have flown D.H.9s to every part of the Union, establishing 93 landing grounds and aerodromes. On numerous occasions they have done the Pretoria-Cape Town flight, a distance of 1,000 miles, in one day, landing twice to refuel.

On Feb. 17 Major J. Holthouse, accompanied by Chief Air Artisan H. MacQueen, attempted a non-stop flight from Cape Town to Pretoria on a D.H.9 fitted with extra petrol tanks. Unfortunately, after covering a third of the journey, the machine caught fire. The manifold had been removed and a spark alighted on the back of the pilot's seat which burst into flames burning the pilot's clothing and the arms of MacQueen, who partially smothered the fire with his hands. Major Holthouse immediately landed the machine but was unable to avoid a crash as he had to stand up in the cockpit and land down-wind. The machine actually ran 100 yards safely and then struck a bank which wiped off the undercarriage. Both occupants escaped unharmed excepting for slight scorches.

The only time that serviceable machines have ever travelled by train was in 1922 during the Bondel Zwart Campaign in South West Africa, when four machines were railed to Kalkfontein, about 700 miles from Walvis Bay, and this was necessary only on account of no aerodromes having been established on the South West Coast, although the Director of Air Services, Colonel Sir Pierre van Ryneveld, had long been urging the Government to do so.

Yesterday saw eleven D.H.9s leave for Durban to inaugurate an Aerial Mail Service between Durban, Cape Town, and intermediary Ports. It is unnecessary to enlarge on this exploit of the South African Air Force, as I am enclosing a newspaper cutting which speaks for itself.

One might add that nowhere will one find keener pilots than those in the South African Air Force whose only complaint is that they do not get sufficient flying although they average about 150 hours a year.

I shall be glad if you will insert this in THE AEROPLANE as it will help to dispel the erroneous ideas which are bound to have arisen through your previous publication.

It is very satisfactory to learn that so much flying is actually done by the S.A.A.F. pilots. But it is quite understandable that long distances may be covered across country on machines which the pilots would very sensibly object to handle violently. Straightaway flying may be quite safe on a machine which would be dangerous if rolled or even looped.

Writing on the same subject Mr. J. G. W. Gordon of the Johannesburg *Star*, who has a very intimate knowledge of aircraft, says :—

The machines here, the gift of the British Government, are of 1917 vintage—9s, 4s, S.E.5s, and Avros. They have been conditioned in little short of marvellous manner by the mechanical staff, and what is more they are kept in condition.

I can assure you that whenever I get a chance (though it is not too often) I am delighted to get into the air, and the officers are only too kind in affording the opportunity. They are educating a backward public, and wherever military duties fit in they give civilians a chance of flying.

As to how little the machines are to be trusted, you may judge from the following. They are not official figures, but I got them from a source that is reliable.

(For the year 1924) :

Average number of machines in commission	42
Average number of pilots flying *each week:*	
Permanent staff	28
Officers on refresher courses	4
Number of officers who went through refresher courses during the year	48
Total number of flying hours per week	60
Estimate of number of passengers (military and civil) carried during the year	1,500
Number of single machine cross-country flights of over 300 miles during the year	60
(Four machines flew from Cape Town to Pretoria, which is miles, in one day last year.)	1,000

Lastly, Colonel Sir Pierre van Ryneveld is Director of Air Services here. Can you imagine the S.A.A.F. "not very keen on flying"?

Also an ex-R.A.F. officer who has recently been flying at Pretoria sends the following excellent description of the way in which the S.A.A.F. Reserve training is done :—

The writer has just returned from a Refresher Course at Roberts Heights (Pretoria) with the S.A. Air Force, and some idea of the way things are done might be interesting to readers of THE AEROPLANE.

About a year ago the S.A.A.F. organised a Special Reserve of pilots drawn from the ex-R.A.F. Officers in the Union. These officers after an initial course of two months will attend a three weeks' course every year. About fifty have qualified so far and one understands this number is deemed sufficient for the present.

About a dozen turned up for the course and after a medical examination which proved too stiff for three of the party, the remainder reported at the aerodrome to be retaught to fly.

The aerodrome is large and fairly smooth with a low kopje at one

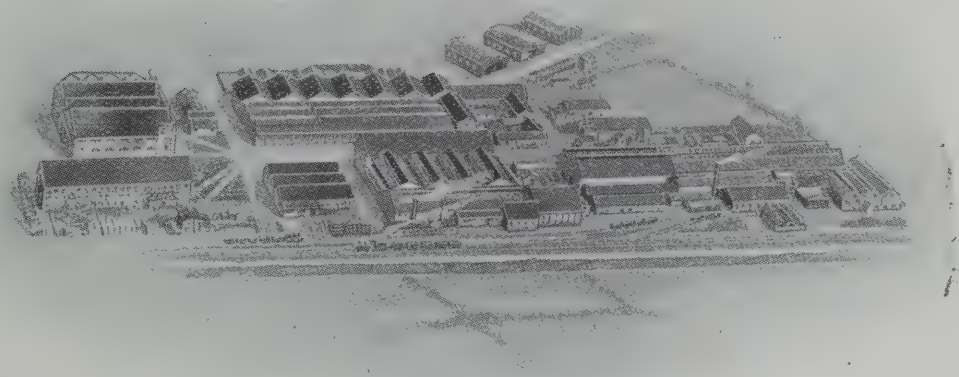


CANADIAN HEADQUARTERS.—Camp Borden, the principal station and flying training school of the Royal Canadian Air Force, as seen from the air.

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end which rather gets in the way of taking-off at times. There is a training flight of Avros (Clergêt), and D.H.9s (Siddeley Pumas), apart from the squadron, which consists of three flights, two of D.H.9s and one of D.H.4s (Rolls). There is also one S.E.5a for the joy-riding of a chosen few.

The hangars are first class permanent affairs stretched out in a long line to one side of the aerodrome with the usual offices, etc., in between. A most imposing stretch of cement tarmac runs the full length of the sixteen hangars and must be close on half-a-mile in length. The aerodrome is well equipped with small repair shops, camera obscura, petrol Bowsers, wireless, Hucks starters, rifle range, and all the hundred and one adjuncts to an efficient establishment.

About a mile away from Zwartkop Air Station, which is the official name of the aerodrome, is the Depot. Here is housed the bulk of the Imperial gift still being sorted out and classified. The main workshops where machines are rebuilt are also situated in the Depot. The shops are modern and contain some up-to-date plant.

Some time ago there were rumours of the unreliability of the machines at Roberts Heights, and one went keenly on the look out for any of the defects one had heard about. After thoroughly examining the work put into machines and engines at the Depot, as well as the machines in the squadron, one can contradict most emphatically any rumours of dud machines or engines. The machines (or should one say "ships" as a good disciple of THE AEROPLANE?) are better kept and looked after in every way than the majority one flew during the war. The machines are of war-time vintage, but that is nothing against them, at least not after they have been through the workshops.

When a machine is unpacked it is dismantled entirely, planes included, all wood is subjected to a close examination and any part the least bit warped or not in first-class condition is scrapped. New parts are made or imported and the machine carefully rebuilt. The latest Air Ministry alterations and improvements are incorporated in each type at the same time.

The mechanics are very efficient, mostly trained in the R.A.F.—two were pilots before 1914. Apprentices are being indentured and in time the whole of the personnel will be trained in the Union. The pilots are almost without exception ex-R.A.F. and R.F.C. officers and are only about thirty in number.

This seems a ridiculously small number and when one sees the whole of the pilots of the S.A. Air Force sitting down to lunch at one table it seems absurd. Money is scarce and some time, perhaps when Parliament is more generous towards aviation, we may have an air force more in keeping with the size and prestige of the country.

The flying training of Reserve Officers is thorough, more so in fact than most pupils received when they first learnt to fly during the war. Most of the course put in twenty-five hours or more and there were no crashes on the course. Altogether it was a most enjoyable two months and one is keenly looking forward to the next time.

The following letter also deserves careful consideration coming as it does from one of the earlist of war-time aviators :—

With reference to your comments on the S.A. Air Force in THE AEROPLANE dated Jan. 28, I feel that your information must have been derived from a source that would not bear investigation.

I happen to have been in fairly close touch with the Air Force out here lately and your remarks do not bear out what I myself have seen. In four years S.A. has given birth to the foundation of a darned fine Air Force on a very limited supply of money, and I have never met a more enthusiastic personnel in my life.

During the few days that I spent in Pretoria I was continually being offered "joy rides," and I was present when the squadron which is experimenting with a mail service from Durban to Capetown left Roberts Heights. A finer crowd of fellows never lived and it would do your heart good to see the spirit with which these people are going ahead under very difficult conditions.

You have always been regarded as the champion of the oppressed and your paragraph has caused intense amazement among people whom you would be the first to admire if only you knew them. Knowing you as I do, I regret very much the hostility towards you personally which your article has created out here amongst the Officers and men of the S.A.A.F. Please try to soothe the ruffled feelings of a really energetic Baby, whose early promise is a credit to its Parent bird, the R.F.C.

(Signed) CLAUDE JOUBERT DE LA FERTE.

The hostile feeling to which the writer refers is precisely similar to the hostile feeling which one created in 1915-16 among a number of pilots of the R.F.C. who, owing to some curious mental outlook or to careless reading of one's writings, regarded one as being an enemy of the Flying Corps at the very time when one was continually risking prosecution under the Defence of the Realm Act in one's efforts to force the Authorities at the War Office to procure more and better machines for our Army Aviators.

From these communications readers may judge that those who are in control of the South African Air Force are doing extremely well under great difficulties. There is no disputing the fact that the S.A.A.F. ought to be equipped throughout with modern machines. The mechanical staff of the S.A.A.F. have undoubtedly done wonders with the material which is inflicted upon them and every credit is due both to the executive staff and the technical staff for accomplishing so much. Nevertheless the fact remains that neither the Government nor the people in South Africa yet appreciate the possibilities of aviation in that country in spite of the numerous efforts which have been made to organise air lines and to popularise aviation by joy-riding. Therefore it is perfectly true to say that aviation in South Africa is in a bad way.

One can only hope that the experimental air line between Cape Town and Durban may be successful. Eleven machines appear to be an enormous number for such an undertaking and one imagines that the work could probably be equally well done by four or five D.H.50s. However possibly the S.A.A.F. regard the experiment as being of the nature of a staff exercise, much as the R.A.F. regard the Cairo-Baghdad air mail, and in that way the experiment seemed to be thoroughly justified.

One can only wish every success to those concerned and hope that all the hard and disheartening work of the past five or six years may have laid the foundations of genuine Service and commercial aviation in South Africa.—C. G. G.

Air Power for the Pacific.

A new type of American seaplane, known as the P.N.9, has just made a non-stop flight of 28 hours 36 minutes, during which a total distance of approximately 2,300 miles was covered.

The flight was made from the Philadelphia Navy Yard, beginning on the morning of May 1, and was made up and down a 40-mile stretch of the Delaware River. A crew of four, 1,300 gallons (presumably American gallons) of fuel, and 150 gallons of oil were carried.

P.N.9 is a large patrol flying boat designed by the American Bureau of Naval Construction and built at the Philadelphia Navy Yard. The type is specially intended for work in the Pacific and was designed with the intention that it should be able to reach Honolulu from San Francisco without refuelling, a distance of a little over 2,000 miles. The flight above recorded is of the nature of a test of this capacity.

The machine is fitted with two of the new Packard 1A 2500 type engines with a low-compression ratio, capable of developing 725 h.p. each. With normal fuel load, including a crew of five men, the total weight is in the neighbourhood of 24,000 lbs.

THE GLOBE TROTTING SEASON OPENS.

Rome—Melbourne.

On Apr. 20 Commandante Pinedo, who is attempting to fly from Rome to Melbourne via Tokio, left Sesto Calende on the first stage of the flight. He is using a Savoia 16 ter biplane flying-boat fitted with a 400 h.p. Lorraine-Dietrich engine.

The route to be followed is via Aleppo, Baghdad, Karachi, Calcutta, Bangkok, Saigon, Shanghai, Pekin, Tokio, and then following the islands of the various Pacific archipelagos to New Guinea and down the east coast of Australia to Melbourne.

On Apr. 30 he was reported to have arrived at Bunder Abbas.

Rome—Buenos Aires.

There is a rumour that Signor Gabriele d'Annunzio is preparing to fly from Rome to Buenos Aires via Gibraltar, Fernando Po, Pernambuco, Bahia and Rio de Janiero. He will use two Savoia 55s, the pilot of the second machine being Commandante Vagliasindi.

The Savoia 55 is a twin short-hulled twin-engined monoplane flying-boat, the tail being carried on outriggers and the engines mounted in one nacelle over the centre of the wing to drive one tractor and one pusher airscrew. This flight is due to start in June.

Paris—New York.

MM. Tarascon and Coli are reported to be preparing to fly from Paris to New York during June. The flight, which is a purely private venture, will be carried out without any official help and no boats will be stationed along the route in case of necessity.

It is stated that the machine to be used will be of French make, but that the engine will be of 500 h.p. of a German type which is being manufactured under licence in France.

The machine will carry 1,000 gallons of fuel. The route to be followed will be via England, Ireland, Newfoundland and Nova Scotia.

A Gift to the Science Museum.

According to *The Times'* New York Correspondent, Mr Orville Wright has decided to remove the original Wright biplane, on which he made the first power-driven flight in December, 1903, from the custody of the Smithsonian Institute in Washington and to present it to the Science Museum at South Kensington, which possesses what is undoubtedly the finest collection of historical aircraft now in existence.

Air Affairs in Parliament.

THE R.A.F. IN IRAQ.

In the House of Commons on Apr. 30, in reply to a question by LT.-CMDR. KENWORTHY, the UNDER-SECRETARY OF STATE FOR AIR said that the R.A.F. had been in action in Iraq five times during the present year. There had been two casualties.

In at least one case the bombing had supervened on inter-tribal fighting and the casualties due to the one cause or the other could not be distinguished. Explicit warnings had been given in all cases except where the air action had been taken in defence of Iraqui tribesmen who had been raided by invading and looting tribesmen.



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1 hour on Heenan & Froude Brake (At high revs.)	—		2,080 r.p.m.
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THE ROYAL AIR FORCE.

The London Gazette.

Apr. 28.

General Duties Branch.—L. S. Potter is granted a S.S. comn. as a Flg. Off., with effect from, and with seniority of Apr. 7, 1925. Plt. Off. on probation E. C. Boucher is confirmed in rank (Apr. 16). Wing Cmdr. E. L. Gossage, D.S.O., M.C., is seconded for three years' duty at the Staff College, Camberley (Jan. 22).

Stores Branch.—Flg. Off. M. R. Preece is placed on retired list (Apr. 18).

Medical Branch.—Flt. Lt. C. P. Barber is granted a perm. comn. in the rank stated (Apr 22) Flt. Lt D. J. Jones, M.B., relinquishes his temp. comn. on account of ill-health (Apr. 1).

Reserve of Air Force Officers.—The following is confirmed in rank (Apr. 28):—Flg. Off. J. G. Goodyear. Flt. Lt. J. F. Stallard is employed with the Regular Air Force for a period of one year (Apr. 8).

Memorandum.—Flg. Off. J. J. O'Connor relinquishes his temp. comn. on ceasing to be employed (Apr. 1).

Appointments.

Week ending May 4.

General Duties Branch.—The undermentioned officers are all posted to the R.A.F. Staff College, Andover, for Staff Course, 4/5:—Wing Commanders D. L. Allen, A.F.C., T. L. Leigh-Mallory, D.S.O.

Squadron Leaders C. H. B. Blount, O.B.E., M.C., C. H. Nicholas, D.F.C., A.F.C., G. C. Bailey, D.S.O., E. A. Beaulah.

Flight Lieutenants the Hon. R. A. Cochrane, A.F.C., J. K. Waugh, D.S.C., W. F. Anderson, D.S.O., D.F.C., T. F. W. Thompson, D.F.C., A. H. Orlebar, A.F.C., W. H. Park, M.C., D.F.C., S. F. Toomer, D.F.C., R. P. M. Whitham, M.C., H. P. Lloyd, M.C., D.F.C., J. H. Butler, R. M. Foster, D.F.C., S. C. Strafford, D.F.C., J. Blackford.

Wing Commander W. L. Welsh, D.S.C., A.F.C., to H.Q., Mediterranean Supernumerary, 8/4.

Squadron Leaders P. B. Hunter, to No. 4 F.T.S., Egypt, 1/4. E. J. P. Burling, D.S.C., D.F.C., to No. 444 Flight, Lee-on-Solent, 27/4.

Flight Lieutenants G. E. Livock, D.F.C., to No. 24 Sqdn., Kenley, 1/5. W. R. B. Annesley, to No. 1 School of T.T. (Boys), Halton, 4/5. R. H. M. S. Saundby, M.C., A.F.C., to Aden Flight, Egypt, 24/3. S. M. Kinkead, D.S.O., D.S.C., D.F.C., to H.Q., Egypt, 28/3. D. S. Earp, D.F.C., to H.Q., Iraq, 15/4.

Flying Officers H. A. J. de S. Barrow, to remain at R.A.F. Depot. E. S. Bullen, to C. and M. Party, Cattewater, 28/4. J. C. Walker, to No. 4 F.T.S., Egypt, 13/2. J. W. Turton Jones, to Aircraft Depot, India, 17/4. R. H. Mahon, to Aden Flight, Egypt, 8/4. H. S. Hobby, M.C., to No. 28 Sqdn., India, 2/3. L. E. Cutforth, to Aircraft Depot, India, 13/2. G. J. Gaynor, to No. 70 Sqdn., Iraq, 8/3. G. S. Brown and L. H. Brooke, to R.A.F. Base, Gosport, 27/4. R. L. Bateman, to No. 2 F.T.S., Digby, 27/4. E. E. Nuttall, to No. 24 Sqdn., Kenley, 27/4. N. C. Bretherton, (Hon. Flt. Lt.) H. W. A. Fox, (Hon. Flt. Lt.) R. W. M. Hall, and (Hon. Flt. Lt.) F. W. Wiseman-Clarke, to Aircraft Depot, India, 8/3. W. A. Opie, to Aircraft Depot, India, 27/2.

Pilot Officers J. A. P. A. Yearsley, to Aircraft Depot, India, 27/2. W. J. Brett, to No. 27 Sqdn., India, 17/3. R. W. Holden, R. O. Jones and W. Wynter-Morgan, M.C., to Aircraft Depot, India, 8/3. G. M. Pitts-Tucker, to No. 70 Sqdn., Iraq, 25/3.

Medical Branch.—Squadron Leader J. T. T. Forbes, to H.Q., Egypt, 6/4. Flight Lieutenants J. A. Perdrau, M.D., to No. 100 Sqdn., Spittlegate, 22/4. D. McLaren, M.B., to No. 4 F.T.S., Egypt, 31/3. E. D. D. Dickson, to R.A.F. Depot, 1/5. Flying Officers W. A. Beck, M.B., D.P.H., to Aeroplane and Arm. Exper. Estab., Martlesham Heath, 21/4. T. W. Wilson, to No. 2 F.T.S., Digby, 28/4. B. Pollard, to C.F.S., Upavon, 26/3. F. W. G. Smith, M.B., B.A., to Basrah Combined Hospital, Iraq, 2/4. C. J. MacQuillan, M.B., B.A., to R.A.F. British Hospital, Iraq, 4/4. F. P. Scholfield, M.B., to H.Q., Iraq, 24/4. Flying Officer (Dental) H. J. Henderson, to No. 4 Sqdn., Sth Farnborough, 4/5.

Stores Branch.—Flight Lieutenant K. D. G. Collier, to Stores Depot, Egypt, 19/3. Flying Officers W. Best, to No. 1 Wing H.Q., India, 3/10. R. Lamb, to No. 20 Sqdn., India, 5/1. F. C. C. Hitchens, to No. 28 Sqdn., India, 24/1.

Accountant Branch.—Flying Officers G. W. Lynn, to No. 41 Sqdn., Northolt, 5/5. J. Charles, to remain at No. 111 Sqdn., Duxford. J. A. Coleman, to H.Q. Accountant Office, Iraq, 23/2. H. Hedderwick, to Brigade Accountant Office, Iraq, 23/2. Pilot Officer K. E. M. Holmes, to No. 39 Sqdn., Spittlegate, 20/4.

Fatal Accidents.

The Air Ministry regrets to announce that as a result of a collision in the air near Leuchars between two Fairey 3 D. machines of the R.A.F. base, Leuchars, at 10 a.m. on May 1, Harry Lestourgeon Roseveare, Lt. R.N., Flg. Off. R.A.F., the pilot of the aircraft, and his passenger, No. 335838, Cpl. Tom Vincent Warwick, R.A.F., were killed.

Edward Acton Alcock Gibbon, R.N., Flg. Off. R.A.F., the pilot of the other machine, and his passenger, No 335763, AC.1. Austin Joseph Stewart, R.A.F., escaped uninjured.

The Air Ministry regrets to announce that as a result of an accident at Melleha, Malta, to a Fairey 3 D. landplane, of No. 440 flight, Malta, on Apr. 30, 1925, Flg. Off. Christopher Denison, the pilot of the aircraft, was killed, and Lt. Henry Thew Rust, R.N., and Telegraphist Oliver, were injured.

A Post-War Iraq Dinner.

It is proposed to hold this dinner at the Holborn Restaurant at 8.15, for 8.45, on the evening of June 27, 1925 (the day of the R.A.F. Display).

All tickets must be applied for before June 1, 1925, and a remittance must accompany the application, together with a statement of the unit with which the officer served.

The dinner will be purely for R.A.F. Officers who have served in Iraq since the Armistice and admittance will be by ticket only.

Air Marshal Sir John Salmond, K.C.B., C.M.G., G.V.O., D.S.O., has kindly consented to take the chair, and Air Commodore A. E. Borton, C.B., C.M.G., D.S.O., to act as Vice Chairman.

Tickets, 12s. 6d., exclusive of all wines, on application to R.A.F., Iraq Dinner Committee, A. and A.E.E., Martlesham Heath.

Parachutes.

There is much interest in the news that courses are now being held in various units of the R.A.F., the personnel of which are being instructed in the art of packing parachutes and leaping out of aircraft with them.

Parachutes are now, or will be very shortly, compulsory for test pilots and they have already been issued to several units.

The crews of Service aircraft are not allowed to make practice jumps until they have qualified in packing their own parachutes.

The Paris correspondent of *The Morning Post*, in a communication dated May 3, states:—

Orders have been issued by M. Laurent-Eynac, Under-Secretary for Aviation, directing that in future all pilots flying on fighting aeroplanes must furnish themselves with parachutes before rising. Within the next few days, it is expected, the system will be extended to all Army bombing and reconnaissance machines, and will also apply to mechanics, machine gunners, and observers

The Recruiting Week.

It is stated that as the result of the recruiting week for the Air Defence (Territorial) Brigades, in which the R.A.F. and the Anti-Aircraft Brigades gave combined displays, more than 1,200 names of intending recruits have been given in.

Rumour has it that the majority of the volunteers wished to join the R.A.F., and not the "Archie" Batteries.

Air Navigation as Done.

One who has done some considerable flying writes:—

"The photograph of Avro's aerodrome in the current number of The Aeroplane puts me in mind of an incident that occurred there not so very long ago. One of Avro's employees—who exactly I do not know—was drifting round the large shed one bright and stilly morn, musing on 'this sorry scheme of things entire,' when, to his utter consternation, a Vimy sidled in round the end of the shed and sat down.

"Out of this Gargantuan apparatus stepped, alone and unaided, an exceedingly small P/O. This diminutive officer smartly approched the aforesaid employee and brightly remarked, 'I've arrived.' Thus taken aback the employee could think of nothing better to say than 'Oh, really!'

"'And now,' quoth the P/O., 'can I make a signal to 58 Squadron, Worthy Down, to say I've arrived?' 'But yes,' replied the unsuspecting employee, 'I daresay if you climb to the top of that tower they'll be able to see you.'

"This rather got the P/O. guessing. However, he eventually explained that he only wanted to send a telegram. So the resources of Mr. A. V. Roe and his Company were put at his disposal, and, in a clear and legible hand, did he trace the following legend:—

"'Vickers Vimy. Pilot, P/O Arrived Gosport 11.30 hrs. O.K. aaa.'—

"Which, I think, goes to show the dangers of setting out on a cross-country flight without a roughish knowledge of elementary air-pilotage, and also how this terrible Naval jargon is slowly but surely inundating our previously-pure vocabulary."

R.A.F. SPORTS.

Boxing.

The sixth annual championships' meeting of the Imperial Services' Boxing Association took place at Portsmouth on Apr. 29 and 30 and May 1. The results of the finals, which were fought on the third day. were as follows:—

Officers.

Feather-weight.—Flt. Lt. E. W. Howard (R.A.F.) beat Lt. Colli (The Army) on points.

Light-weight.—Sub-Lt. J. R. Harvey (R.N.), walked over. Flg. Off. C. Whitfield, scratched, by doctor's orders.

Welter-weight.—Lt. C. G. H. Crispin (Army) beat Mr. W. Paig (R.N.) in the second round.

Middle-weight.—Capt. D. A. C. Shepherd (R.M.) (holder) beat Lieut. W. Schoales (Army) on points.

Light-heavy-weight.—Lt. Courtis (The Army) beat Sub-Lt. Furs (R.N.) on points.

Heavy-weight.—Lt. Lister (The Army), the British Amateur Champion, beat Plt. Off. Chichester (R.A.F.) on points.

Other Ranks.

Fly-weight.—L-AC. Williamson (R.A.F.) beat Marine Marsden (R.M.) on points.

Bantam-weight.—Sjt. Fleming (Army) beat Ldg. Seaman Patter (R.N.) (holder) on points.

Feather-weight.—A.B. Chadwick (R.N.) beat R.S.M. Evans (Army) on points.

Light-weight.—Cpl. Moyse (R.M.) beat F-S. Stone (R.A.F.) on points.

Welter-weight.—A.B. Hardy (R.N.) beat Cpl. Downton (R.M.) on points.

Middle-weight.—Sjt. Crawley (The Army) beat Marine Piddock (R.M.) on points.

Light-heavy-weight.—Marine Trinder (R.M.) beat A.B. Willoughby (R.N.) on points.

Heavy-weight.—L.S. Evans (R.N.) beat Gdsmn Young (The Army) on points.

The Team Boxing Championships.

The following letter has been received from the C.F.S. Upavon :—

With reference to THE AEROPLANE dated Apr. 29, 1925, an article appears on pages 409 and 410 on The R.A.F. Team Boxing Championships, in which it is stated that :—" The final in division 'B,' between Duxford and Kenley, will take place next week."

I would point out that the final is between Duxford and the R.A.F. Station, Upavon, and that the date and place has not definitely been decided upon, but may take place at this Unit.

Sport in Iraq.

A summary of Sports at Iraq Aircraft Depot, Winter Season, 1924-5 :—

ASSOCIATON FOOTBALL.—During the season all unit teams, i.e., A, B, C, D Sqdns. and the Serjeants' Mess entered for the Hinaidi League and for the "Taylor" Cup Competitions. C Squadron were top of the League and were also successful in winning the Cup. Their record in the League was : Played 26, won 20, lost 2, drew 4. Goals for 55, against 13. Their Cup record was : 1st round, beat A Sqdn. (A.D.) 3—0. 2nd round, beat Air H.Q. 2—1. 3rd round, beat No. 1 Sqdn. 1—0, after a draw 1—1, semi-final beat No. 4 Arm. Car Coy. 2—0, after two drawn games, 0—0 and 2—2. Final, beat No. 5 Arm. Car Coy. 1—0.

Depot matches played resulted in a win against the 2nd Bn. Beds. and Herts. Regt., 3—1, a draw 0—0, and a loss 0—2 against the R. Inniskilling Fusiliers. The following from the Depot were selected to play for the R.A.F. v. Army :—Sjt. Salter (C), Cpl. Randall (C), AC. English (C), AC.1. Walker (A) and AC.1. Edge (C).

RUGBY FOOTBALL.—The Depot had a very successful season, and although the period during which Rugger can be played is necessarily short, great keenness was displayed and more matches were arranged than during any previous season. The results of the matches played are as follows :—Versus Air H.Q., won 3 points to nil; 45 (B) Sqdn., won 11 points to nil; 45 (B) Sqdn., won 8 points to nil; Combined Arm. Cars and Hospital, won 23 points to nil; No. 1 Sqdn., drew 6 points all; Air H.Q., lost nil to 3.

HOCKEY.—A, B, C and D Sqdns. teams were run during the season, and all four entered for the knock-out competition and the Hinaidi League. The best record was obtained by C Sqdn. with 11 wins and 2 losses, but changes of personnel due to the trooping season and to other causes considerably handicapped the teams, and the final position of the Depot Sqdns. in the League were not so high as had at one time been hoped. At the same time considerable enthusiasm was shown and there is every reason to expect that with fewer changes next season will produce better results. The only Depot match played was against the "Casuals" team from Baghdad, which the Depot won by 4 goals to 2.

RIFLE AND PISTOL SHOOTING.—Nearly 100 members from the Depot joined the newly-formed R.A.F. Rifle and Pistol Association, and at the Annual Meeting on Apr. 7 and 8 the Depot rifle teams of eight obtained the following places. A Sqdn, 3rd; B Sqdn., 4th. In the rifle team of four, D Sqdn. obtained 1st place, and in the Lewis Gun team of three A Sqdn. were 2nd. Individual prizes were won by Sg. Off. Daniels (A), S.M.-2. Hoffman (B), F-S. Spry (B), Sjt. Kirby (D), L-AC. McArthur (B), and AC.1 Mills (A).

ATHLETIC SPORTS.—The Annual Athletic Sports were held on the Depot Sports Ground on Mar. 6. Great keenness was shown in competing for the Sqdn. Challenge Cup, C Sqdn. having won it in 1923 and 1924. The issue was in doubt until the last event; finally A Sqdn. came out winners with a total of 54 points to C Sqdn.'s 51, B following with 14, and D 8 points.

A Sqdn. won the 100 yards, high jump, 880 yards, 440 yards relay, 220 yards relay, and 220 yards, and were second in long jump, 120 yards hurdles, 440 yards and tug-o'-war, whilst C won the 3 miles team, long jump, 120 yards hurdles, 1 mile and 1 mile relay, and were second in the 220 yards and 880 yards relay.

At the conclusion Mrs. J. F. A. Higgins kindly presented the prizes.

In the R.A.F. Athletic Championships held on Apr. 4, A Sqdn. entered teams for six events, winning the 440 yards relay, 880 yards relay, 3 miles team, putting the shot, and were runners-up in the tug-o'-war. In the Inter-Services Championships on Apr. 12, Wing Cmdr. Spicer, Flt. Lt. Mitchell, S.M.-1. Mawby, Cpl. Edgar, L-AC. Grant and L-AC. Grainger of the Depot represented the R.A.F.

On Mar. 11 the annual Inter-unit Cross-country Championship took place under good weather conditions. Of a field of 14 teams, the Depot Sqdns. were placed as follow :—A Sqdn., 5th; C, 11th; B, 13th; and D, 14th.

BOXING.—The R.A.F. (Iraq) Association was formed towards the end of 1924, and it has enjoyed a very successful season. The season opened with a Novices' Competition, open to all R.A.F. units in this country, and the Depot had the satisfaction of winning the Cup by gaining the largest number of points.

Subsequent events have been the Team and Individual Championships, in both of which the Depot produced some highly skilled boxers. Notable amongst these is Sjt. Salter, who won the Light-weight Championship, L-AC. Calder, who won the Light-heavies, L-AC. Symmons, L-AC. Judge, and ACs.2. Giblin and Cavanagh. The season closes with the Inter-Services Competitions, and it is satisfactory to know that several of the Depot boxers have been selected for training, with a view to representing the R.A.F. against the Army.—R. H. W. E.

The Halton Magazine.

The new number of the *Halton Magazine*, No. 1, of Volume II, includes notes from Cranwell and Flowerdown, so that the Aircraft Apprentices may have an idea of what is going on at the other training Units.

The present editor, who has run the magazine so well, has found it necessary to resign and it is possible that the price of the next issue may have to be increased. In spite of these disasters there does not seem to be much wrong with it, as it has a circulation of 5,000.

As Tel and the Dragon is the true story of Brust, who discovered that water, apart from quenching thirst when beer was not to be had, could be used with good results for cleansing the body. The story tells the results of such an abominable heresy and is very good.

Halton sports of all kinds are discussed and illustrated.

The British Legion.

H.R.H. the Duke of York, K.G., at the Annual Conference of the British Legion, in 1924, said, " The British Legion, existing as it does for peace, for comradeship, and for service to others, possesses opportunities for doing good equalled by few other organisations."

The work of the British Legion during the past year is summed up in the annual report of the Executive Committee. The report also includes the accounts and balance sheets of the Fund.

The Women's Section consists of the relatives and dependents of ex-Service men. Ex-Service women come, very properly, into the British Legion itself. It is to be presumed therefore that the civilian husband of an ex-Service woman may belong to the Women's Section.

A copy of this report will be sent to anyone who applies for it (enclosing 3d. in stamps), to 26, Eccleston Square, S.W.1.

For their own good, and to help a great cause, all men and women who served with the Royal Air Force, and who have not already done so, should join the British Legion.



R.A.F. POLO IN EGYPT.—The R.A.F. in Egypt have won the Polo Tournament for the Gordon Cup, which is open to teams representing Units and Formations outside the Cavalry Brigade. The R.A.F. team met the H.L.I. in the first round and after giving them 3 goals beat them 9—3. In the second round they met the Duke of Wellington's and giving them 4 goals beat them 10—4. In the finals they met the R.A.V.C. and playing them level beat them 5—2.

The Cup has been sent down to No. 208 Squadron (Ismailia) for safe keeping.

The team were :—Flt. Lt. Ferris (1), Wing Cmdr. J. E. A. Baldwin, D.S.O. (2), Sq. Ldr. Probyn, D.S.O. (3), and Sq. Ldr. Waller, A.F.C. (back).

THE WILBUR WRIGHT MEMORIAL LECTURE.

The annual lecture in honour of the memory of Wilbur Wright, which was read before the Royal Aeronautical Society on Apr. 30, was this year the work of Rear-Admiral D. W. Taylor, E.D., D.Sc., LL.D., a very distinguished member of the American Corps of Naval Constructors, who was intimately associated with the development of Naval Aeronautics in the United States, and who is now a member and the Secretary of the American National Advisory Committee for Aeronautics.

Admiral Taylor unfortunately was forced by an affliction of the eyes to return to America before the date of the lecture, which was read for him by Commander J. C. Hunsaker, U.S.N.

The title of the lecture—Some Aspects of the Comparison of Model and Full Scale Effects—indicates the nature of the subject which the author had chosen with adequate clearness, and the contents thereof should be of very great interest to all those who are interested in the very vexed subject of "scale effect" in this country—not so much because the paper contains any very strikingly novel views, but because it gives a very clear idea of the nature of the work on this subject which has recently been undertaken in America, and some indication of the attitude of the American research organisation towards its work.

Generally speaking, Admiral Taylor's paper suggests that the National Advisory Committee, although it is no less aware of the intricate physical and mathematical problems which await solution before the theory of aerodynamics can be regarded as having been placed on a firm and sound foundation, is a little more intimately in touch with the practical engineering requirements of the designer, and that it succeeds in presenting the results of its research work in a somewhat more directly useful form than does our own indigenous research organisation without any serious retardation of what it is fashionable in this country to call fundamental research.

The paper itself begins by a general statement of the theory of dynamical similarity as it is applied to aerodynamics. In this there is nothing novel, but Admiral Taylor stresses rather more acutely than is common in this country the fact that in addition to the speed-length-viscosity function in the force equations at least two other functions, one involving the compression of the air and the other a gravity term have equal mathematical claims to consideration, and that if all three are in fact important, model tests cannot similate full-size conditions in any way. Thus he puts the normally accepted criterion of similarity—the so-called Reynold's number or VL function—into its proper place as an engineering approximation. As an appendix to these considerations he gives the result of tests in the American high pressure wind tunnel of three representative aerofoils at Reynold's numbers ranging from those customary in atmospheric tunnels up to those met with in full-sized aeroplanes. The three aerofoils are R.A.F. 15, U.S.A. 27, which is not unlike a thickened-up R.A.F. 15, and Gottingen 387, which is of a not very dissimilar shape, but appreciably thicker than U.S.A. 27.

These tests do not show any unexpected results. Changes both in lift and drag with change of Reynold's numbers are of the nature of secondary corrections, except at angles close up to that of maximum lift.

With R.A.F. 15 and with U.S.A. 27 the maximum lift seems to increase steadily up to the highest Reynold' number. With the very thick Gottingen 387 section the effec on maximum lift is smaller and erratic, the highest maximun being attained at low pressures—the equivalent of small scale and the lift at maximum pressure being lower than tha at the maximum pressure, but higher than that at an inter mediate pressure. That is apparently the lift first of al falls off from ordinary model conditions, and then begins t rise again at about the equivalent to full scale conditions

As far as drag is concerned there is in all cases a re duction as full size conditions are approached except agai near the maximum lift where the drag curves follow the lif curves in reverse direction. That is a rise of maximun lift means a drop in drag and vice versa.

The paper then discusses the airscrew and establishes bases on which different airscrews may properly be com pared, and then proceeds to give details of certain com parisons between tunnel tests of airscrew models and o similar full-size airscrews fitted to an aeroplane. Thi particular form of comparison is for various reasons les direct and less accurate than the comparison between th same model aerofoil in a wind tunnel at varied Reynold' numbers. But on the whole the results given in the pape show a satisfactory general resemblance between the be haviour of the model airscrew and the full-size one. Th divergences are in some cases large when considered from th laboratory point of view, but not so large as to render th model results an unsatisfactory basis for engineerin purposes.

It is unfortunately impracticable to give the lecture i full in these pages, and those to whom the details containe in this paper are of interest should consult the complet paper when in due course it is published by the Society.

At the conclusion of the paper Sir Sefton Brancke moved a vote of thanks to Admiral Taylor and to his deputy Commander Hunsaker, who had so ably abstracted and rea it. This particular Wilbur Wright Lecture marked the 21s year since the Wrights' first achievement of human flight and that cordial spirit of co-operation in the exchange o scientific data concerning aeronautics between America an this country, of which this paper was one manifestation, wa welcome not merely on its own account but as one iten among many making for a sound friendship and under standing between the two countries which should be of th utmost importance to the world. Such a friendship woul make for the prevalence of peace and honest dealing through out the world.

Lt.-Col. Mervyn O'Gorman in seconding the vote referre to the work of the American National Advisory Committe of which Admiral Taylor was so prominent a member an to the way in which their technical reports were freely dis tributed in this country.

The meeting terminated by a second vote of thanks move by Col. O'Gorman and carried by acclamation to Lt.-Co Lockwood Marsh for his past services to the Society, on th occasion of his last appearance in the official capacity o Secretary.

Col. Marsh in reply expressed his regret at the circum stances which had led to his severing his official connectio with the R.Ae.S.

THE LIGHT AEROPLANE POSITION.

After much discussion and conference between the Air Ministry, the Royal Aero Club, the aeroplane and engine designers, it has been decided to postpone the competition for the Air Ministry's second series of light aeroplane prizes until the summer of 1926, in order that tested and proved engines may be produced in time to give the aeroplane designers a reasonable chance of knowing what they have to deal with in the way of engine troubles.

It has been decided that all capacity and horse-power ratings shall be abandoned, and in place of these a limit of probably 170 lbs. is to be placed on the weight of the engine, leaving it to the engine designer to produce what seems to him the most satisfactory engine within that limit. This weight is to be the weight of the engine complete with ignition equipment, airscrew hub, water pipes and water (if the engine is water-cooled).

A certain number of engine makers have undertaken to tackle the production of suitable engines and to put them through standard type tests by the end of the summer this year, so that provided they are reasonably punctual, the aircraft designer will have nearly a year wherein to settle the machine design, with reasonably accurate information as to what engines they may rely upon.

Altogether this seems the most satisfactory way out of the present difficulty which arose only as the result of rushing last year's two seater competition through in too much of a hurry, instead of carrying on with the development of the single-seater last year and announcing the two-seater contes for this summer.

The adoption of a weight limit for the engine will probabl serve—at least temporarily—to produce suitable engines fo competition purposes, although it may lead to the productio of engines of far too complicated and expensive a nature to b of any use except to Government-subsidised undertakings.

The weakness of this method of rating lies in the fac that for a given weight one may produce either an expensive engine of high output, or a cheap and simple engine o moderate output. For competition work, naturally, every body will choose the former type, and unless some other limi than that of engine weight is placed on the competing machines they may cease entirely to be light aeroplanes in any sense of the term.

It would probably be possible to produce an engine—cos being neglected—of 100 h.p., or even more, within this limit and 80 h.p. will very probably be achieved in time for next year's contest. Machines with such engines would probably be lighter, more controllable, and land slower than, say, the present standard Avro, but would probably cost just as much both to buy and to run.

Thus precisely what those who most strongly supported continued experiments with gliders feared, is apparently to come to pass. Instead of using the glider and the real light plane as a cheap method of developing machines of im proved aerodynamic efficiency and requiring the minimum ex

THE 17,000 MILES FLIGHT.

"Trifles" That Loom Large in the Success.

PALMER Cord Tyres

"Reference must be made to one or two other trifling trifles, more directly connected with the machine itself. For instance, during this 17,000 mile flight there *were* certain occasions when they had to land on *terra firma* and take off again. This is where the Palmer Aero tyres did their little bit—and they did it very well too. Many of the aerodromes were—well, somewhat rough and hard, while others consisted (wholly or in part) of the very best mud. In either case the tyres stood up splendidly, and the special shape of tread prevented the machine from sinking into the soft places and turning turtle. In addition, the tyres put in some 50 miles' work on rough roads (when transporting the machine to suitable taking-off grounds), while, except for the small quantity of Baghdad air, the air in them was the same from start to finish."

"Flight," 26th March, 1925.



The especial Palmer Aero Tyre fitted to the D.H 50 which, owing to the design of tread, enabled the machine to operate without difficulty over the hardest, roughest, or softest ground.

STANDARD SIZES OF PALMER LANDING WHEELS AND TYRES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	99	178.	38.89	132/46	1000×150	201	185.	60.32	125/60
300×60	16	111.12	25.4	Central	,,	112	150.	38.09	Central	,,	210	185.	60.32	Central
,,	17	72.39	12.7	Central	650×125	119	178.	55.	132/46	1000×180	148	220.	80.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	149	185.	55.	Central
,,	138	130.	38.09	Central	750×125	77	178.	44.45	132/46	,,	155	220.	66.67	Central
575×60	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	166	185.	55.	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	900×2 0	107	185.	55.	Central
,,	111	150.	38.09	104 46	,,	96	178.	55.	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	99	178.	38.89	132 46	,,	128	220.	66.67	Central
,,	34	150.	31.75	104/46	,,	112	150.	38.09	Central	,,	137	250.	80.	Central
,,	111	150.	38.09	104 46	800×150	82	185.	55.	135/50	,,	202	185.	60.32	Central
700×75	78	178.	44.45	132 46	,,	85	185.	55.	Central	1100×220	134	220.	66.67	Central
,,	79	178.	44.45	Central	,,	161*	185.	55.	135/50	,,	136	250.	80.	Central
,,	100	178.	38 09	132 46	,,	163*	185.	66.67	135/50					
,,	101	178.	31.75	132/46	,,	169†	185.	55.	135/50	1250×250	13	250.	80.	Central
00×100	77	178.	44.45	132/46	,,	211*	185.	60.32	135/50	,,	154	304.8	101.6	Central
,,	92	185.	55	135/50	1000×150	131	220.	66.67	Central	1500×300	115	304.8	101.6	Central
,,	95	185.	55.	Central	,,	150	185.	55.	Central	,,	126	304.8	152.4	Central
,,	96	178.	55.	132/46	,,	167	185.	55.	125/60	1750×300	139	400.	152.4	Central
					,,	174	250.	80.	Central					

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†Wheel No. 169 is fitted with Ball Bearings.

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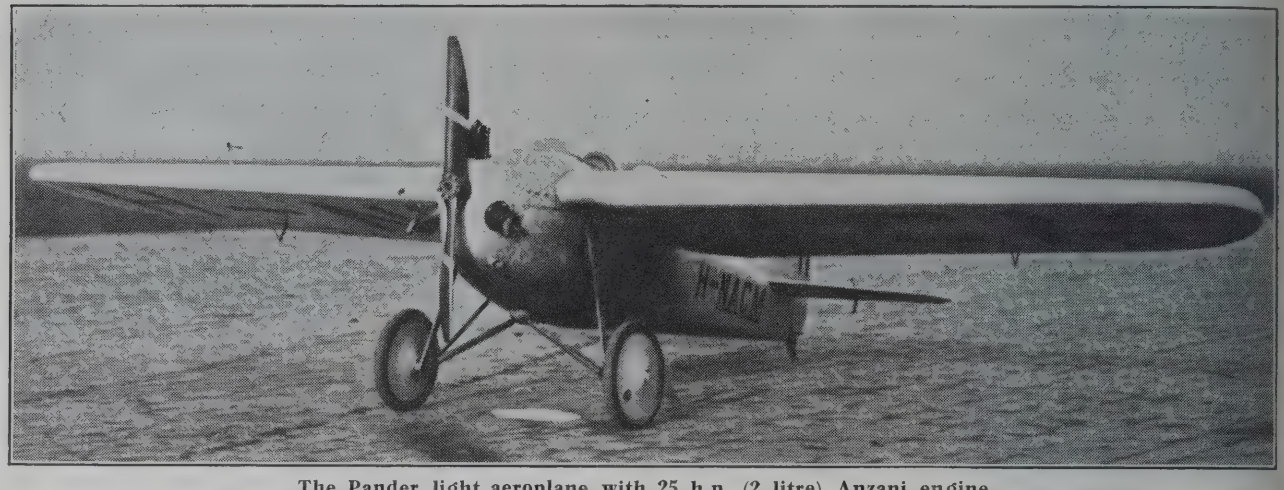
PARIS 31, Rue la Boétie.

VK (304)

penditure of power, the old, bad process of overcoming all difficulties by using more and more powerful engines has begun again. And by about 1930, light aeroplane competitions for machines with 350 h.p. engines will probably be in vogue in this country.

The weight limit fixed for the engine should include not only the engine complete but also fuel and oil for, say, three hours, at full power. This would automatically limit the output to within certain limits, and keep the engine design to within economical limits. A figure of 270 lbs. as the limit would then probably produce a 50 h.p. engine weighing 170 lbs. To get up to 60 h.p. on this limit the designer would have to reduce the engine weight by over 20 lbs. to allow for the extra fuel and oil necessary, or else reduce his fuel consumption per h.p. hour very considerably. For 80 h.p., the possible weight of the engine itself would be about 110 lbs. and for 100 h.p. about 70 lbs., so that a very grave handicap would be placed on any effort to push up power unduly without in any way penalising the designer who could cut down his weight per h.p. The inclusion of fuel and oil in the weight limit would merely encourage him to produce the lightest possible engine, of, say, 60 h.p., instead of tempting him to produce the maximum possible output from the maximum allowable weight.—W. H. S.

THE PANDER LIGHT AEROPLANE AT CROYDON.

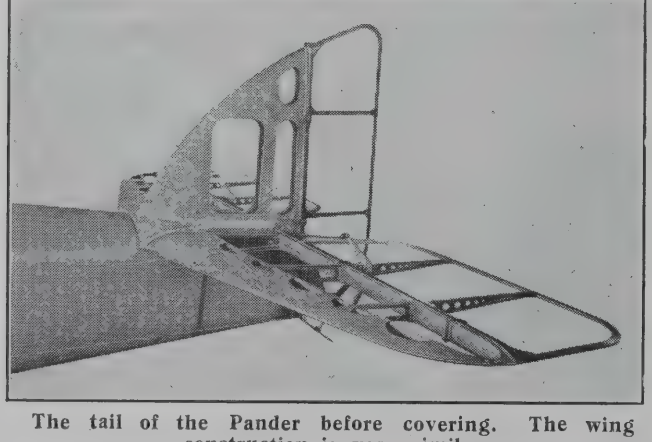


The Pander light aeroplane with 25 h.p. (2 litre) Anzani engine.

The little Pander light aeroplane which made such a favourable impression at the recent Paris Aero-Show was flown to Croydon from Rotterdam on Apr. 27 by M. Raparlier and on the following day a demonstration of the machine was given for the benefit of all those interested by Mr. Piercey and M. Raparlier jointly. This demonstration drew Sir Sefton Brancker, and certain other representatives of the Air Ministry, Col. Darby and Mr. Harold Perrin on behalf of the Aero Club, and representatives of several of the provincial Light Aeroplane Clubs. It may be said at once that the performance of the machine fully justifies the favourable impression made by the machine's excellent looks.

The day fixed was one of the foulest of those provided by the past few months. A very gusty and bitterly cold N.E. wind ran up to round about 35 m.p.h. in gusts, squalls of rain and hail followed one another in quick succession, and of a violence such as made either flying or watching the process about as uncomfortable as possible. Nevertheless both pilots had taken the machines out before the appointed hour of the demonstration and continued to do so during the possible intervals on both morning and afternoon.

This particular machine has done a large amount of demonstration flying. It was at Le Bourget for some months, where any licensed pilot was free to take it out for trial and where many took advantage of the opportunity. It was flown thence to Rotterdam, has been flown there to some considerable extent, and then was flown to Croydon. The three-cylinder Anzani engine consequently has no noticeable compression and is certainly not giving its maximum possible output. Yet the machine takes off in a very short run—about 20 yards in Tuesday's wind—and climbs at a very steep angle. It regularly reaches 1,000 m. (3,280 ft.) in 8 mins., so that the initial climb rate must be 500 ft. per minute or so. As this climb occurs at some speed not over about 40 m.p.h. the gradient is about the same as that of a modern single-seat fighter climbing 1,000 ft. per minute, and is good enough to get out of very confined spaces.



The tail of the Pander before covering. The wing construction is very similar

The machine flies very prettily indeed and has evidently extremely well-balanced and effective controls. It performs all the standard stunts cleanly and it is noticeable that recovery from a spin is remarkably clean and quick. It is always difficult to judge of the speed of so small a machine—particularly in a high wind—but the machine does not give the impression that her claimed maximum of 130 km.h. (81 m.p.h.) is an overstatement.

The Pander has an excellent gliding angle, but can be brought down quite steeply at a low air speed under complete control and planted without any preliminary floating. Both pilots were regularly using the small plot of ground in the S.W. corner of the aerodrome for landing on—which is evidence that no large space is needed in which to alight.

Thanks to the steerable tail skid the machine handles very well indeed on the ground.

A noticeable point is the fact that although this particular machine has now done quite a lot of flying, the external finish of the whole is in as perfect condition as was the machine exhibited at Paris. This fact speaks highly for the excellence of the material and of the dope and fabric work. Particularly noticeable is the absence of any sign of wrinkling on the veneer leading edges of the wings and tail surfaces, or on the covering of the body.

The machine made a very good impression indeed on all who saw it, and the fact that it can be sold in this country at £450 naturally was not without its influence on the representatives of the R.Ae.C. and of the Light Aeroplane Clubs.

One of the most attractive features of the machine is the simplicity of all the fittings and the ease with which wings, undercarriage or other components may be dismantled after undoing a small number of nuts, which should make both for ease of storage and for simplicity in repair.

The Institution of Aeronautical Engineers.

On Friday, May 8, Capt. W. H. Sayers will read a paper on Some Lessons of 1924, at 6.30 p.m., at the Engineers' Club, Coventry Street, W.1. The title originally announced for this paper was A Resumé of Achievements during the Past Twelve Months.



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COMMANDER BURNEY ON AIRSHIPS.

The Institution of Aeronautical Engineers on Friday, Apr. 24, met to hear a paper by Commander C. D. Burney, C.M.G., M.P., R.N., on The Position of the Airship in Aerial Transport. The following is a brief abstract of this paper :—

With the exception of the construction and trial flight of the Z.R.3, recently built by the Zeppelin Company, of Germany, to the order of the U.S. Government, there has been so little actual operation of airships that from the commercial point of view it is only possible to indicate the performance of an airship embodying the latest developments in design.

I propose to direct attention rather to the new improvements in design which have been incorporated in the 5,000,000 cub. ft. ship now being built by the Airship Guarantee Company for the British Government, and the effect they will have in relation to the contemplated mail and passenger service between this country and New Zealand.

The principal departures from existing practice may be divided into four main sections :—(1) Streamline design—with pilot car in nose of vessel. (2) New method of anchoring, necessitating new type of mooring mast and mooring gear. (3) Development of hydrogen-kerosene engine. (4) Structural design of hull and wiring.

Taking first the streamline type of ship. This new design marks an advance on previous work in the attainment of complete streamline form by eliminating, so far as possible, of all external projections from the envelope. To this end all passenger cars, control cars, and observation posts will be situated inside the hull, leaving only four engine cars suspended below it. Experiments in the wind tunnel show that these improvements greatly reduce the head resistance and thereby tend to increase the speed of the vessel by about 20 per cent.

It has been found that a much greater total effect is produced upon the resistance of the ship as a whole by disturbing the streamline in the front part of the vessel. After all obstructions which might deflect and disturb the streamline flow are removed from that part of the vessel which is in front of the maximum diameter, the actual improvement will be considerably greater than would be obtained if the same number of obstructions of the same kind were removed from the after part of the vessel. [NOTE :—This idea is contrary to all aeroplane experience, which teaches that what is in front of the maximum diameter matters little, so long as there is a clean run-off.—C. G. G.]

It is evident that improvement in design must tend towards a perfectly clean shape for the foremost part of the vessel, and therefore arrangements should be made to remove the control car from the normal position. The best alternative position is the nose of the ship, but there was a difficulty in utilising this space for the control car so long as the Air Ministry type of mooring mast was to be used. This type of mooring mast necessitated a strengthened nose to take the fittings. A new type of mooring mast was accordingly devised, which freed the nose space for the purpose of providing room for the control and observation car. At the same time this new design had the advantage of holding the ship from two points instead of from only one point.

This development brings out quite clearly that the design of the ship and the design of the mooring arrangements are interdependent, and therefore any policy of commercial development should, if it is to be efficient and satisfactory, contain the condition that control and direction of the bases should be in the same hands as the control and direction of the ships themselves.

Another factor which has been carefully considered has been the desirability of developing a type which would be equally suitable for land work and for sea work.

It has been found that before the final connection between the moving ship and the fixed mast is made the ship should be controlled by a triangulated system of wires. In the Air Ministry type of mooring this is attained by utilising sideguys dropped from the ship and secured to bollards, perhaps a thousand feet from the base of the mast. Such a system cannot be used when it is desired to moor an airship to a vessel, for the simple reason that fixed points at a radius of a thousand feet from the base of a floating mast will not be available.

In the new type of mooring mast the triangulated system is obtained by having positions of attachment for the sideguys borne by two arms, capable of being swung horizontally on a revolving platform at the top of the mast. This system has a further advantage : the whole system may be rotated.

Other subsidiary advantages are inherent in the design, but the main advance that has been made is, firstly, that it makes possible the construction of an airship having the minimum of resistance and therefore the maximum radius of action, and, secondly, it standardises the type of mooring mast both for shore stations and for floating bases.

The next development, namely the introduction of the hydrogen-kerosene engine, is not claimed as being entirely new, because as far back as 1913, the Airship Department of Vickers Ltd. were engaged in preliminary experiments in this direction. Owing, no doubt, to many other problems which had to be faced at that time, no very practical result was obtained.

The advantages of the engine are twofold. Firstly, by utilising hydrogen, which would otherwise be expelled from the airship in order to compensate for the weight of fuel used, it is possible to economise in fuel consumption in two directions : each pound weight of hydrogen contains some 40,000 B.T.U.s as compared with 20,000 B.T.U.s of kerosene, and as the ratio of the lift of hydrogen to its weight is approximately 14 to 1, a reduction in the amount of kerosene required, by one-seventh is obtained. Secondly, a heat cycle can be employed in the engine which gives a higher thermal efficiency than would otherwise be possible.

It may be as well to expand this point in some detail. The use of hydrogen as a partial fuel in an internal-combustion engine has been shown to give an efficiency as high as that obtained with a Diesel engine.

A Diesel engine derives its high efficiency from its high compression. Unless the fuel is injected well before the piston reaches the top of its travel it is not possible to obtain low fuel consumption combined with high-power output. The combination of high compression and early injection of fuel results in pressures in the cylinder from 50 per cent. to 100 per cent. greater than those in a carburettor-type engine giving the same power in the same sized cylinder.

The carburettor-type engine can only work with a relatively rich mixture. It is common knowledge that when the fuel supply is cut down, as, for instance, when a smaller jet is put in the carburettor, the engine is liable to fire back through the inlet valve. This is due to slow burning of the fuel of the previous combustion lighting up the fresh charge as it enters the cylinder.

By admitting at the same time as the diluted fuel vapour one-fifteenth part of its weight of hydrogen, the burning of the fuel is greatly accelerated. No firing back occurs and the quantity of liquid fuel can be still further reduced while the air throttle remains wide open. The result of this further diluting of the fuel with air is that the efficiency of the engine is increased, the loss of heat to the cylinders and in exhaust gases being much reduced. The pressure in the cylinder is naturally less and so is the power output of a given cylinder, though at maximum efficiency with hydrogen the power is no less than that of the Diesel engine when working at its maximum efficiency and the maximum pressure given by the combustion with hydrogen is not much more than half as great as for the Diesel engine.

Now consider the effect upon the performance of a vessel embodying these developments. With the same capacity to carry a useful load, the radius of action of the vessel is exactly doubled. From a careful analysis it is expected that the Airship Guarantee Company's vessel will be able to carry 140 passengers and seven tons of mail at an average speed of 70 m.p.h. for a distance of 3,500 miles.

In making calculations of this kind it is necessary to analyse conditions upon the route that it is proposed to operate, otherwise a considerable over-estimate of performance might be made. For instance, if a mooring station was to be situated at Baghdad, conditions of temperature and barometric pressure might occur that would reduce the lift of the vessel some 13 to 15 tons, in comparison with the "standard" conditions adopted for calculation in England.

The total time between England and Australia would be increased by the duration of time taken to Baghdad and Colombo for refuelling, but it would seem possible that the trip to Freemantle should be made in about 6½ days.

Russian Air Transport Methods.

The following letter has been received :—

Sir,—In your issue of the 8th inst., I notice a paragraph referring to an aeroplane accident in Russia. To complete the story, it may be noted that the accident was in no way due to the construction of the aircraft, or to any defect therein. The victims themselves caused the disaster by an extraordinary proceeding.

In the inquiry on the accident, it transpired that the passengers had taken with them into the cabin a considerable quantity of sporting ammunition and a sack of loose powder, also that they smoked cigars. Whether the passenger who dropped his cigar on the powder sack was merely tired of this life and took the opportunity to ensure a spectacular and certain mode of ejectment into the next, or what else may have occurred, must be left to conjecture. At any rate, it was established that the machine was wrecked in mid-air by an explosion in the passenger cabin caused by smoking in the presence of unprotected explosives.

On British air lines smoking is prohibited in all passenger machines. On Continental air lines, I believe, smoking is fairly generally allowed in the cabins of all-metal machines, but not in wooden machines. Of course, the carrying of explosives or inflammables as luggage is forbidden on all regular air routes, both by regulations and common sense.

With your concluding comment one can but agree, with an exception so far as the pilot is concerned. His name was actually Joseph Spiel (the wrong spelling doubtless led to his inclusion with the "load" generally), a Bavarian, and skilful commercial pilot, whose loss is regrettable. (Signed) H. R. TROST.



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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 20; Tuesday, 20; Wednesday, 19; Thursday, 22; Friday, 17; Saturday, 20; Sunday, 13.

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London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 78, passengers 233, freight 8 tons.

AIR UNION:
Paris—London: Machines 39, passengers 138, freight 11 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 12, passengers 40.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

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Machines 3.

Total number of trips by British machines: 81, carrying 247 passengers. Foreign machines, 51, carrying 136 passengers.

Comparative Figures:

For week ending May 3:
Machines, 82; Passengers, 411; Crews, 120; Total personnel, 531.

Corresponding week, 1924:
Machines, 44; Passengers, 99; Crews, 75; Total personnel, 174.

Corresponding week, 1923:
Machines, 117; Passengers, 475; Crews, 191; Total personnel, 666.

Corresponding week, 1922:
Machines, 109; Passengers, 234; Crews, 156; Total personnel, 390.

Corresponding week, 1921:
Machines, 65; Passengers, 227; Crews, 79; Total personnel, 306.

Corresponding week, 1920:
Machines, 84; Passengers, 126; Crews, 96; Total personnel, 222.

Croydon Notes.

AT THE SIGN OF THE BLUE BALLOON.

It has been suggested, by a congenital idiot of our acquaintance, that our title should read "Blue Baboon," and that we ourselves should sign same and append it as a *nom de plume* at the end of these lines. This does not strike us as witty and we willingly pass on to other topics.

Mr. Rogers, who recently flew to Basle and back with a ton and a-half of gold in a day, some 1,000 miles or more, thus breaking all records, might, we think, have employed the time spent in the return journey much more profitably by flying himself and his £100,000 out of the sphere of British influence. But there! These pilots are *so* honest.

Strange how differently people strike different people, is not it? Mr. Rogers, in an interview with *The Evening News*, made all sorts of jolly remarks, such as: "It was a long day, as I was on the aerodrome at 5.0 in the morning I was pretty tired, I assure you."

Interviewing Mr. Rogers oneself on the Sunday, one gained a quite different impression. Mr. Rogers, far from being rocked in the cradle of the air, expressed himself as having been "blinking well bumped to blooming blazes all over the flickering sky. And as to the 5 ack emma business!!!"

Finally he concluded, smiling (to *The Evening News*, not at us), "There is no risk of stealing, if you send gold by air"—Here we must regret to differ. In the air, possibly not, at present, but what of Mitcham Common at dawn? One feels sure that the crooks of London are noting all this publicity on their immaculate cuffs and biding their time; and one trusts that the gold is sufficiently well guarded on the land part of its journey.

Gen. Brancker expressed himself as very pleased with the little Pander machine, which was demonstrated in a very high wind, hail and rain, by Monsieur Raparlier and Mr. Piercey, on Tuesday, Apr. 28. Major Brackley and Mr. Robinson, who flew the machine next day, were, we understand, loud in its praises.

Mr. Bouderie is beginning to get Goliaths in, in droves of three and four at a time, all droning in chorus like asthmatical bees of Gargantuan size with full stomachs.

We hear of a great dance over at Disposals recently and of a wonderful feat performed at dawn in carrying a complete brass band, instruments and all, to East Croydon station, in somebody's Ford. The drum and bassoon had to be cast overboard for ballast on Crown Hill, but the owner of the Ford ranks the exploit at least equal to the carrying of the gold to Basle.

Things one would like to know in this connection are "who knocked the neck off the bottle of port in mistake for a bottle of stout and who pinched the bottle of whiskey that the other hero had just brought up from a neighbouring hostelry to replenish a fast-waning stock, and whether the original owner did not swing it across the pinchee in the end on account of possessing the only available corkscrew?"

Northern Air Lines are running with remarkable regularity and good loads, and all credit is due to Capt. Greig and his merry men all, not forgetting Mr Macintosh, who has done some all-weather flying on that service.

The K.L.M. Jupiter Fokker is said to be an extremely good proposition, getting off with a full load like a lark which has inadvertently settled on a red-hot slag heap.

The "Joy-Stick" Case.

Some considerable time ago Mr. Robert Esnault-Pelterie, one of the pioneers of French aviation and, one believes, the first person to make an all-steel aeroplane, sued the French aircraft constructors under an old patent of his for the use of the stick control of aircraft during the War and obtained from them something like £120,000 in damages.

Apparently encouraged by this success, he threatened proceedings against half the British Industry, and actually brought actions against the Aircraft Manufacturing Co. Ltd., Beardmore and Sons Ltd., The Grahame White Co. Ltd., A. V. Roe and Co. Ltd., and the British Aeroplane Co. Ltd., because machines made by these firms were used with the British Army for the defence of France during the War. His claim was for royalties, which, one gathers, might have amounted altogether to something in the neighbourhood of £1,000,000.

He took action in the French Courts, presumably in the hope that British firms would let judgment go by default, in which case he would have been able to distrain on any loose property of these firms in France and also (if allowed by our Courts) on property in Great Britain. The S.B.A.C. therefore approached the Air Ministry and pointed out that apart from any question of the validity of the patent, the machines were sold and delivered to the British Government in this country regardless of where they were to be used and that the British Government was responsible for taking them to France.

After some discussion the British Government agreed to fight the case in the French Courts on behalf of the British aircraft constructors and the result was that Mr. Esnault Pelterie was non-suited in the French Courts, and thus the British aircraft constructors are free from liability.

So far as one can discover the first patent for a single joy stick control for aeroplanes in the World was that granted to Mr. A. V. Roe in 1906, and presumably, if Mr. Esnault Pelterie and has endeavoured to make his claim in the British Courts he would have found himself ante-dated by the Avro patent.

Time is Money.

It is reported that recently an experimental air mail trip was run between New Orleans and Chicago by Capt. H. Fow and Lieut. V. J. Meloy on an U.S. Army D.H.4b, the distance being covered in 8 hrs. 10 mins.

The flight, which was authorised by Asst. Postmaster General Paul Henderson, was sponsored by business organisations in the following cities along the route:—Montgomery and Birmingham, Ala., Nashville, Tenn., New Orleans, La. Louisville, Ky., and Indianapolis, Ind. A mail cargo valued at over three million dollars was carried.

By saving more than two-thirds of the train time, bankers consigning securities to Chicago saved one day in making clearings on the items sent.

It is estimated that $50,000 could be saved daily and owing to the success of the experimental flight it is hoped that a regular service will be opened up in the near future.

Fairy Seaplanes for Holland.

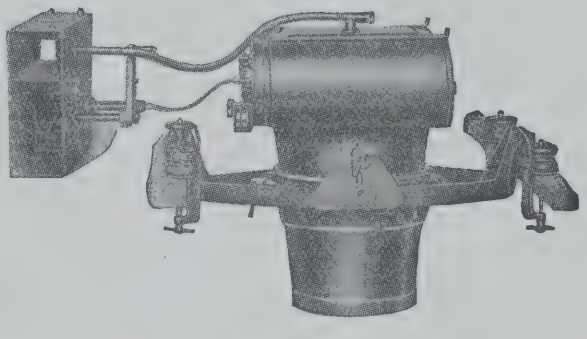
The Fairey Series III seaplanes (Napier Lion engines), recently ordered by the Dutch Government, have now been delivered. The Dutch Naval acceptance tests were passed without difficulty, including a climb to 17,000 ft. with full load. This is not the absolute ceiling of these machines.

The machines were taken over by Vice-Admiral J. H. Zeeman, from the Hamble Works of the Fairey Company. The Dutch pilots, who have been practising on them in preparation for the flight to Holland, have expressed themselves delighted with the machines and engines.

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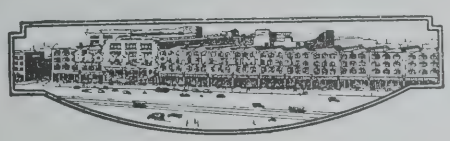


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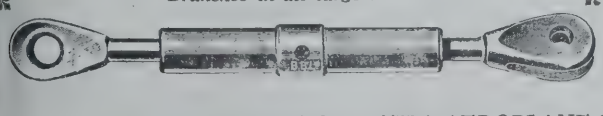
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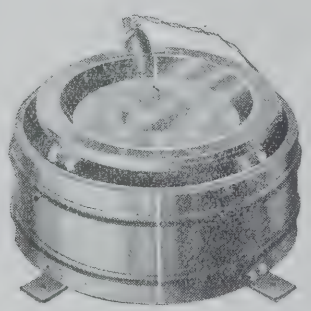
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PERSONAL NOTICES.

DEATHS.

DENISON.—On Apr. 30, as the result of an aeroplane accident while on combined manœuvres at Malta, Christopher Denison, Plt. Off., No. 440 (Fleet Reconnaissance), Flight, R.A.F.

Mr. Denison was gazetted into the R.A.F. as a Plt. Off. in June, 1922, and posted to No. 2 F.T.S., Netheravon, for a course of instruction. Thence he went to the R.A.F. Base at Calshot and was in H.M.S. *Eagle* at the time of the accident.

DREDGE.—On Apr. 29, as the result of a motor-cycle accident near Bournemouth, Felix Allen St. George Dredge, Lieut., R.N., attached R.A.F.

ROSEVEARE.—On May 1, in a flying accident, at Leuchars, Lt. H. L. Roseveare, N.R. (attached R.A.F.) (Tom), youngest son of Professor W. N. and Mrs. Roseveare, of Pietermaritzburg, Natal, grandson of Mrs. Done Bushell, of Harrow, aged 25.

MARRIAGES.

FLEMING—POWLES.—On Apr. 27, at the Cathedral Church of St. Mary, Edinburgh, by the Very Rev. W. J. Margetson, Provost, Robert S. T. Fleming, Flt. Lt., R.A.F., late Capt., 93rd Burma Infantry, I.A., eldest son of Dr. and Mrs. Robert A. Fleming, of 10, Chester Street, Edinburgh, to Cecilia, younger daughter of the Rev. Ernest and Mrs. Powles, of Snailwell Rectory, Newmarket.

GLENNY—BOYES.—On Apr. 29, at St. George's, Hanover Square, by the Rev. H. Swanzy, Vicar of Newry, Co. Down, Sq. Ldr. Arthur Willoughby Falls Glenny, M.C., D.F.C., R.A.F., only surviving son of Mr. and Mrs. J. S. Glenny, Glenville, Newry, Co. Down, to Avice Noël, only daughter of the late George Boyes and Mrs. Boyes, 39, Chomley Gardens, N.W.6.

ISAAC—KING-FARLOW.—On Apr. 25, at Twickenham, by the Rev. P. Cole Sheane, M.A., Flt. Lt. Frederick Harold Isaac, D.F.C., eldest son of Walter Isaac, J.P., and Mrs. Isaac, to Muriel, daughter of Arthur King-Farlow, and the late Mrs. King-Farlow.

WORMELL—HANBURY.—On Apr. 21, at Outwood Parish Church, Surrey, Flg. Off. Eric Wormell, R.A.F., youngest son of Mr. and Mrs. W. J. Wormell, to Marcia, second daughter of Mrs. Hanbury.

FORTHCOMING MARRIAGES.

DAVIES—TUDOR.—The marriage arranged between Mr. E. D. H. Davies, R.A.F., and Miss Aldyth Tudor will take place at St. Paul's Church, Camberley, on June 4, at 2.15 p.m.

FERREIRA—ROBINSON.—The engagement is announced between Capt. Edwin Carl Ferreira, late 111 Sqdn., R.A.F., second son of Mr. and Mrs. M. J. Ferreira, of Linthwaite, Windermere, and Miss Jessica Gorges Robinson, elder daughter of the late Mr. John G. Robinson, of Settle, and Mrs. J. G. Robinson, The Hoo, Windermere.

BIRTH.

GODDARD.—On Apr. 27, at Stoneleigh, Digby, Lincoln, to Mildred (*née* Inglis), wife of Flt. Lt. R. Victor Goddard, R.A.F.—a son (John Inglis).

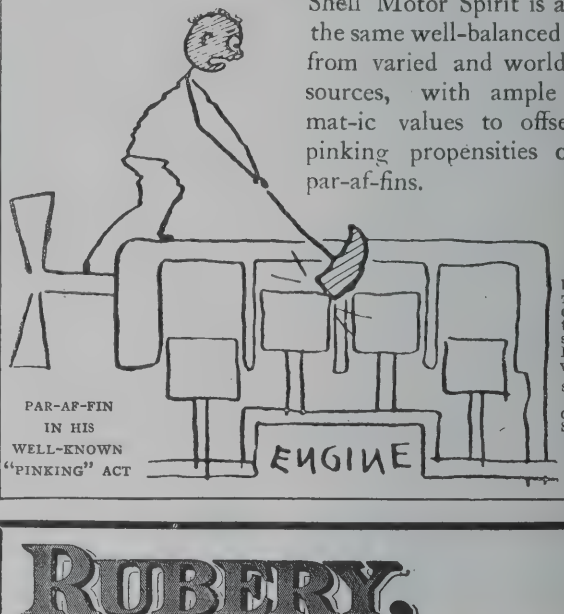
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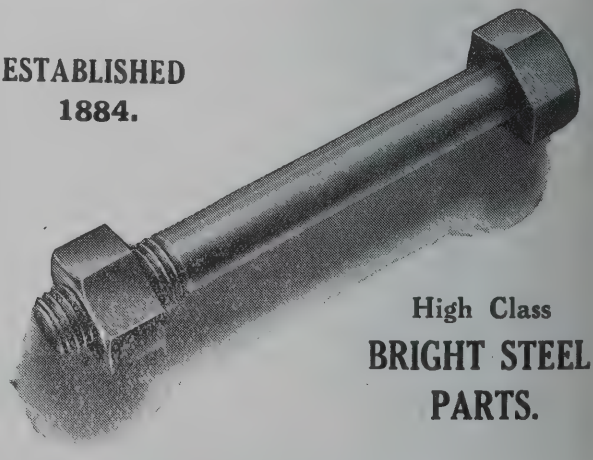
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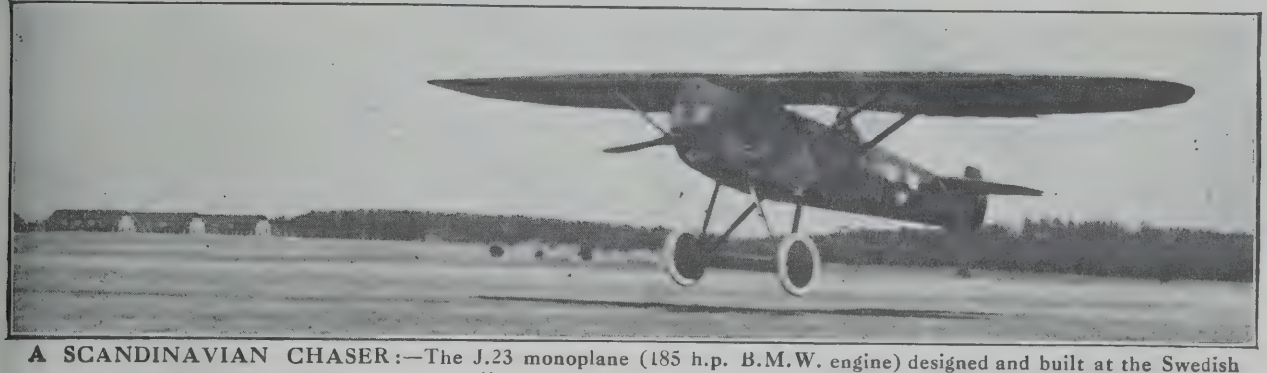
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INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

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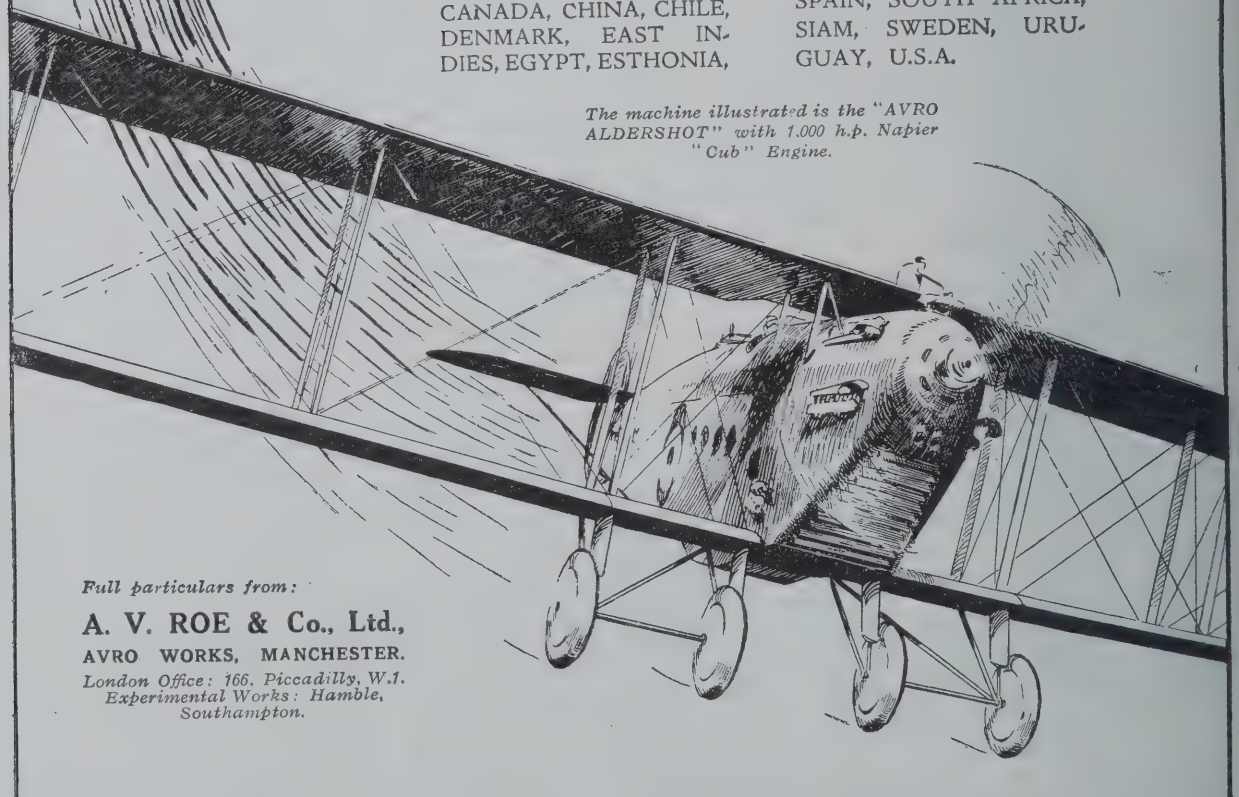
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VOL. XXVIII. No. 19.

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ON IMPERIAL SAFETY.—III.

Metal Aircraft.

A very great deal of good work has been done in this untry already in the way of experiments in metal con-ruction but we are nothing like as far ahead as we ought be or as we might have been if the problems of metal nstruction had been properly tackled by the Air Ministry perts, or if those firms who have been experimenting with etal construction had been properly encouraged.

The first question that has to be settled in the interests standardising aircraft production when the war begins is ether we are going to use steel or aluminium alloys. The ench are ahead of us in some forms of experiments with de-gns in aluminium alloys and they are very wise in pinning eir faith to aluminium because France has probably the ggest source of supply of aluminium in the World. We in is country have comparatively small aluminium supplies our own and we shall not be able to depend on French pplies in time of war because the French will want all eir aluminium themselves.

Moreover England has always been a country of iron and eel workers. An enormously high percentage of the wealth this country has come from the products of our iron and eel manufacturers. Our great industrial districts are eady equipped with the necessary plant to produce steel the highest quality. We have our own coal for the pro-ction of steel and although we produce little of our own on ore we can get practically unlimited supplies from Spain d elsewhere as we did during the War 1914-18. Therefore seems rather as if this country would be wise to lay itself t to produce steel aircraft rather than aluminium.

At the same time there is no reason why we should not end a good deal of money on experiments with Duralumin d its various kindred metals, aluminium alloys, just in se we may be able to develop our own supplies of alu-nium in Scotland or get supplies from outside. It ay be that for certain types of aircraft or for certain parts aircraft aluminium may be preferable to steel. But judg-g from the work in steel which has already been done ere seems to be every probability that we shall be able to ild our aircraft entirely of that metal.

Just who began steel construction in this country would be fficult to decide. One remembers some very interesting periments with steel bodies and steel wing-spars being ade by Vickers Limited at Brooklands as early as 1911. d if one recollects rightly the famous Vickers "gun 'bus," hich was one of the first aeroplanes designed deliberately as fighting machine, had spars of steel tube and steel tail-oms.

During the War practically nothing was done in the way producing steel aircraft but a vast amount of very valu-le experimental work was done by the Steel Wing Company hose chief, Mr. J. D. Mooney, in spite of all kinds of verse intrigues and obstacles achieved most valuable re-ts and registered a series of patents which seemed to ver almost every possible design along that firm's own rticular system of metal construction. Some time before e Armistice the Armstrong-Siddeley Company, now Arm-ong-Whitworth Aircraft Limited began experimenting th steel aircraft structures and also made valuable pro-ess. And it is now of interest to note that there is an nicable arrangement between the Armstrong-Whitworth n and Mr. Mooney's firm, so that the knowledge gained m the two separate series of experiments is immediately ailable for the improvement of steel construction.

A vast amount of experimental steel work has also been done Boulton and Paul Limited, of Norwich. Mr. J. D. North s turned out quite a number of multiple-engined machines nstructed entirely of steel and has reduced his structural ights so that the all-steel machines are actually lighter an wooden machines of exactly similar type. And one be-ves one is correct in saying that the latest Boulton and ul product is the fastest twin-engined machine in the orld.

Short Brothers of Rochester, who may be fairly called the neers of British sea-going aircraft, produced very shortly after the War the one and only all-metal aircraft, the Silver Streak, in which the covering as well as the skeleton was made of aluminium alloy. Since then they have produced metal flying-boat hulls, both large and small, with great success and have learned enough to justify their all-metal designs being put into regular production.

In addition the Bristol Co., the Avro Co., the Blackburn firm and the Hawker Engineering Co. have all experimented with steel structures. And the Beardmore Co. have built a big metal flying boat to Dr. Rohrbach's design.

In fact taking it all round we know quite a great deal about metal construction in this country but even now we are not anything like as far ahead as we ought to be. At any rate one doubts whether in the event of a sudden out-break of war we could start forthwith the mass production of all-metal aircraft. We could start the mass production of wooden aircraft, because the majority of our factories are equipped for wooden production, but one believes there would be some considerable time before we could begin to produce metal aircraft at the same rate that we could produce wooden machines if the timber were available—which it is not.

Mass-Production.

Now for the safety of the Empire we should be just as concerned to arrange for mass-production of aircraft in case of war as to have trained pilots and mechanics and to have the best possible designs of aircraft. As Air Commodore Halahan said at the Dinner of the Women's Royal Air Force Old Comrades' Association recently, the organisation of the Royal Air Force is being laid down by Sir Hugh Trenchard in such a way that it will form a sound and solid foundation for an enormously expanded Air Force in time of war. The Air Council should take care that the Aircraft Industry is organised on an equally sound and solid foundation for the immediate expansion of output.

One has pointed out in previous articles that none of the aircraft which are on order for the R.A.F. can compete with foreign designs in sheer performance, though admittedly our actual construction is equal to the best foreign construction and vastly better than most. Our performances are poor because the technical experts at the Air Ministry absolutely refuse to give our Trade designers a free hand with their designs to produce the best possible machines.

Admittedly all the new types which are on order for the R.A.F. to replace the good old trusties of wartime design, such as the Bristol Fighter and the D.H.9a and the Sopwith Snipe, and so forth, are only stop-gap designs. They are better than anything the R.A.F. has got but they are nothing like as good as we might have if Trade designers had a free hand. That fact is recognised by the higher authorities at the Air Ministry. And that is one of the chief reasons why nobody in the Aircraft Industry at the present moment has got anything which could fairly be called a production order.

Stabilising the Industry.

Also as one has pointed out, none of the new stop-gap designs can be standardised for mass production because wood enters so largely into their composition that they could not be produced in quantities if needed.

But there is yet another factor in the organisation of aircraft supplies in readiness for a great war. That is the establishment of the Aircraft Industry itself on a thoroughly sound basis.

Ever so many years ago, before the outbreak of the War in 1914, if one recollects rightly, Mr. Churchill laid down the policy that our Air Power must be based on a financially and technically sound Aircraft Industry. During the past two years orders from the Air Ministry have increased to such an extent that the Trade has been making a little money. And this year prospects are considerably brighter, as may be judged from the advertisement pages of The Aeroplane, which are always a kind of barometer of the moral and financial state of the Aircraft Industry. When any trade feels pleased with itself and is making money and is receiving orders it advertises. When it is short of business the

first thing on which a trade economises is the money allocated for advertising. But even to-day when the Trade knows that it will do pretty well out of the 1925-26 Budget, it has no guarantee that it will get any orders at all out of the 1926-27 Budget.

Of course those who have faith know that more and more machines *must* be ordered in the years to come. And a firm which is a one-man concern can afford to back its chief's faith in the future. But a firm which is possessed of shareholders, which one might almost regard as being the modern equivalent of the ancient habit of being possessed of devils, has to justify its faith by its balance-sheet. And any board of directors which spent the firm's money on a large lay-out of new machinery for the mass production of metal aircraft would find some difficulty in persuading the shareholders that the amount spent could justifiably be entered as an asset under the heading of goodwill on the credit side of the sheet. Shareholders want to see actual orders.

Continuity of Orders.

This phase of the question was very ably set forth by Sir Harry Brittain, M.P., a Director of the Napier Co., in his speech on the Air Estimates, when he pleaded that continuity of orders over a series of years should be assured to the Aircraft Industry in order to ensure stability in the Trade and to enable the directors of the various firms to lay down a settled aircraft policy for years ahead.

Naturally it is difficult for a Government department dealing with such ephemeral things as the designs of aircraft to give any firm orders for existing types of machines to be produced three or four years hence. As a matter of fact one sincerely hopes that three years hence nobody will have any orders for any aircraft of any type which is at present being produced. Three years hence every firm in the Trade ought to be rolling in orders for machines and engines as well which are very much better in performance than anything which they are producing to-day, and of different and improved design.

One hardly thinks that this will be so because unless the War starts first it will take at least three years more to get rid of the malign influence of the Air Ministry's experts. But if we could only kill the experts (officially of course) the Trade if left to itself would certainly be producing much better machines all round than it is allowed to design at present. And then our performances would be as far ahead of those of foreign competitors as our construction is at present.

At the same time something certainly ought to be done, as Sir Harry Brittain suggested, to assure continuity of orders to the existing Trade firms. One can only suggest that the Air Ministry should make a definite agreement with those firms which at present compose the Aircraft Industry that orders to a definite amount shall be given to them in succeeding years, not necessarily for such machines or engines as they happen to be producing at the moment but certainly for machines and engines of some sort, subject of course to their products being satisfactory.

One Way of Doing It.

Naturally it would be unfair to put every firm on an equal footing, and to guarantee each firm an equal amount of work, or even an equal percentage of work based on recent orders. Of course the firms which produce new and particularly excellent designs must be rewarded more than those which might be content to sit still and either live on their reputations or take orders for anything which the Air Ministry likes to tell them to make. Every effort ought to be made to encourage the production of new designs, and, as one has often argued in this paper, the Trade designers ought to be given an absolutely free hand.

One suggests that when the Air Force wants a new type of machine, whether a pursuit ship or a reconnaissance machine or a high-speed bomber or whatnot, every firm in the Trade should be asked to produce a machine of that sort. There is no reason why because a firm made a good pursuit ship ten years ago it should be debarred from making a triple-screw machine this year, or *vice versa*. All the Air Ministry need say is that they want a machine for a certain purpose and that it must have such-and-such a performance, and the speed, climb, duration and load carried must be so-and-so. Then any firm which liked to take the risk could build one machine or as many more as it liked to fulfil those requirements.

The Air Ministry could then guarantee to buy at a fixed price any machine which fulfilled those requirements and proved itself airworthy but would undertake to give big orders providing for a handsome profit for whatever firm produced the best machine in that class. In this way firms would be induced to take a certain amount of risk in producing a new design because they would know that at any rate most of their out-of-pocket expenses would be covered.

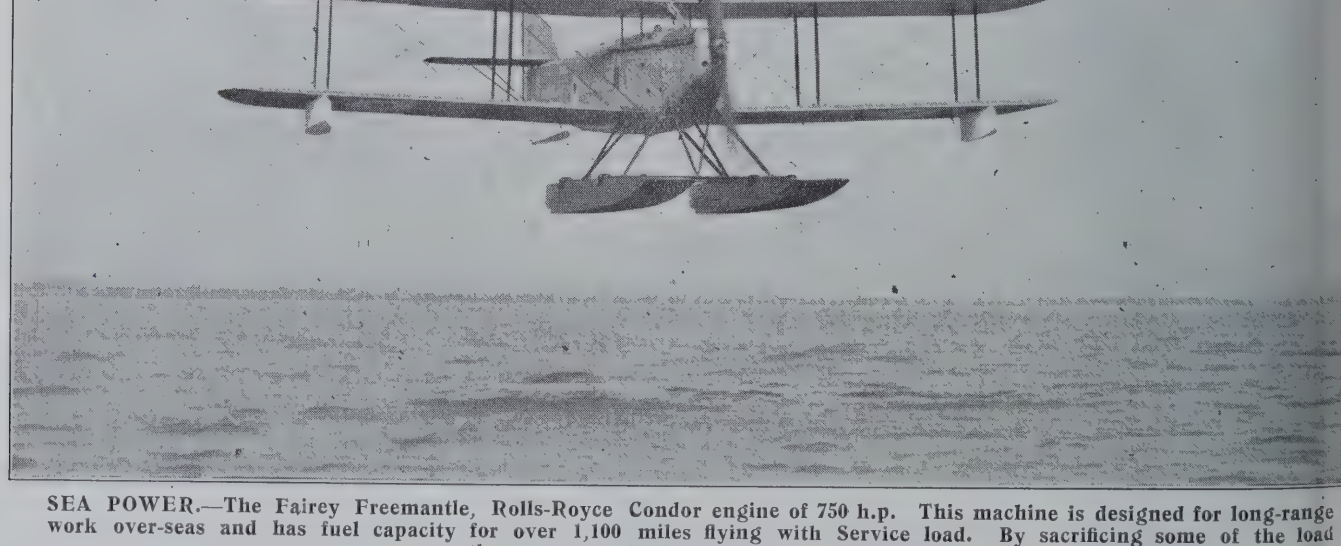
The successful designer would be assured of a big profit so that the gamble would be worth taking. And those firms which produced the unsuccessful machines could then be assured, under the original agreement, of enough orders for the construction of the successful types to keep them and their design staffs going until another new type-competition began.

What Is Needed.

To sum up the whole situation as briefly as possible, the Air Force must have machines with a better performance if it is to maintain its moral as the best Air Force in the World. It must be backed by an Aircraft Industry which must be assured of orders for several years ahead, so that the directors of the various firms composing the Industry may be justified in spending money on experimental machines from among which can be selected the machines necessary to maintain the moral of the Air Force.

Also proper steps must be taken not only to assure that the firms in the Trade will be financially secure for some years ahead, but that the designs themselves will be useful for some years ahead. And the designs approved must be such that material will be available for the mass-production of aircraft by those firms in the event of the outbreak of war.

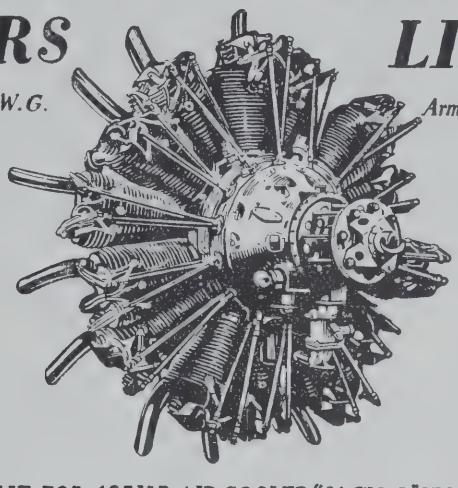
If those few simple conditions be fulfilled by the adoption of a definite policy along those lines by the Air Ministry during the next twelve months then we may look forward with comparative quietness of mind to the safety of the Empire in years to come.—C. G. G.



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G.W. 1925

THE TRUTH ABOUT FORD AIRWAYS.

Much has appeared in print, both in European and American papers, about the entry of Mr. Henry Ford into Commercial Aviation. Imaginative journalists have conjured up visions of a sky darkened with aerial "Tin Lizzies," or "Flivvers," at any rate to the same extent that our roads are infested with those Ford cars and vans which add some hundreds per cent. to the dangers of motoring, not because of any evil inherent in that wonderfully reliable vehicle the Ford car, but because its low price and its ease of control have resulted in the production of hundreds of thousands of drivers who have little enough sense of any kind and no traffic sense whatever. It seems well, therefore, to give a fairly clear account of what is in fact Mr. Henry Ford's precise connection with aviation.

The connection really began through Mr. William Stout, known in American aviation as Bill, quite short like that, much as Mr. Ford is commonly known as Henry.

Several years ago Bill Stout conceived the idea of making metal aeroplanes, and established himself as the Stout Metal Airplane Company at Detroit, Michigan, the home of Ford cars. There he built a curious bat-winged monoplane which flew, but did not quite come up to expectations.

Therefore he built an all-metal cantilever monoplane, with a Liberty engine, on more or less normal lines. This machine proceeded to fly with all the efficiency of an ordinary stick, string, and fabric machine. The first of them made its appearance at the Dayton Air Meet last October and gave everybody a very favourable impression of the all-metal aircraft.

In forming this company Bill Stout managed to rope in practically everybody of note in the Automobile Industry in Detroit. For example, one finds in his list of subscribers such names as Scripps, Chrysler, Vincent, Fisher, Dodge and Litchfield, and his Directors include, besides Mr. C. F. Kettering, the chief of General Motors, and Mr. R. A. Stranahan, the name of Edsel Ford, who is the son of the great Henry.

It is through Mr. Edsel Ford and his enthusiasm for aviation that Henry himself became, as the Americans say, infected with the Aviation Bug.

As the result of Edsel Ford's interest the Stout Metal Airplane Company was presented with a plot of ground close alongside the administrative offices of the Ford Company at Dearborn, some few miles outside Detroit. This plot of ground was made into a very effective aerodrome, and on it was built a beautifully equipped little experimental works, in which the Stout Metal Airplanes are produced.

Incidentally, alongside it are the experimental works of the Aircraft Development Corporation of Detroit, where Mr. Ralph Upson, the famous balloonist, and Mr. Carl Fritsche are experimenting with an all-metal airship, the skin of which is of metal and is at the same time the gas container and the constructional shell of the whole apparatus. So that Ford interests are also concerned with lighter-than-air craft as well as the Stout Metal Airplanes.

The interest of Henry Ford himself in aircraft work is shown by the fact that although it is very difficult to find the great Henry at any of his numerous production plants he can be found almost any day of the week at one time or another on the Dearborn Aerodrome watching the tests of Stout aircraft or investigating the work in progress in the shops. Having become so keenly interested in the possibilities of aircraft it is obvious that Henry Ford will not stop short at merely experimental work, and that he must, with his usual foresight, appreciate the ultimate possibilities of air transport.

Now the American Continent is specially designed for the operation of air lines. Most of it is flat, and the majority of it is open country. With the exception of the Rockies, there are no really high mountains anywhere, the railways are slow and badly run, the people as a whole are in a hurry and are less careful of life and limb than are the people of effete Europe, so everything has merely been waiting for the starting of air lines at the right moment.

The United States Post Office, thanks to the driving force and vision and faith of Colonel Paul Henderson, the Assistant Postmaster-General, has for the past year or so been running a trans-Continental air mail service daily between New York and Chicago with a regularity greater than that of the American trans-Continental mails which travel by rail. And so public opinion has been educated to a very great extent as to the possibilities of air transport.

Consequently Henry Ford has now hit on the one method by which the American people can receive their final course of education in the possibilities of air transport. He is planning to connect all the various Ford factories and other enterprises with one another by an air transportation system, which includes landing fields adjacent to every establishment. This system will be operated by the Ford Company's own air fleet of Stout Metal Airplanes to carry packages and mails pertaining to the Ford business.

To appreciate what this means one has to realise that the Ford production plants and Ford automobile depots, not to mention Ford lumber camps and the Ford coal mines and the Ford iron mines, are scattered all over the United States. Detroit is the head centre of everything, but there are vast works at Chicago, there is a great assembly depot in New Orleans, there is another great depot in San Francisco, there are production plants in Cleveland and Buffalo.

In fact in every city of any importance in the United States there is a Ford establishment of such size that a regular freight and mail service between it and headquarters or between it and another Ford establishment is necessary every day.

The Ford scheme is to connect all these Ford establishments by a regular network of air lines all over the States. And from these private airways public transport lines may be developed.

The first of all these lines, that between Detroit and Chicago, has just been put into operation, and in the first week it made its daily trip on six days of the week with a commercial load of over 1,000 lbs. weight on each trip. That is the start of the Ford airways, and, as everybody knows, when once a thing gets started in America it has a habit of going pretty fast.

The entry of the Ford interests into American aviation may conceivably scare some of the American manufacturers with the idea that the great Henry intends to corner the aircraft business. It may be even that some European manufacturers will fear that some years hence Ford airplanes shall flood the European and Colonial markets as Ford cars have flooded the roads. To all such one would point out that the more Fords there are on the road the more other cars are sold.

The probability is that if the Ford car had never been introduced in the States half the other automobile firms would never have come into existence and the half which did exist would be doing only a fraction of the business which they are doing at present. The Ford car popularised motoring as nothing else could possibly have done.

The man who buys a cheap car as his first car is the potential possessor of more and more expensive cars as he gets on in the world. Similarly with aeroplanes the man who buys a cheap low-powered aeroplane at the start will ultimately buy more powerful and more expensive aeroplanes. Therefore it is quite possible that in time we who are concerned with the Aircraft Industry will have cause to be thankful that the Ford interests took to the air.—C. G. G.

THE U.S. SERVICES RACING PROGRAMME.

The U.S. Army Air Service News Letter of Apr. 20, states :—

With a view to defending the Pulitzer Speed Trophy for airplanes and the Schneider Cup Trophy for seaplanes, the Army Air Service and the Bureau of Aeronautics, Navy Department, are co-operating in the procurement of suitable high-speed planes to defend these trophies. These contests which have been the classics in Aviation for many years, have been notable for their development of engineering talent, which has been translated into Service equipment in the Army and Navy. The continuance of the Army and Navy in International Racing of land planes and sea planes is a recognition of this valuable school of development, as well as a stimulus to the interest of the public in aviation generally.

Steps have been taken looking to the procurement jointly of three planes for the Army and Navy—one speed plane will be allocated to the Army, one speed plane to the Navy, and the third plane will be held in reserve as available to that Service which may have need of it. Unofficial arrangements have been made with the Curtiss Company, of Garden City, Long Island, to proceed with the work on these planes.

A fourth plane will be partially built for destruction tests. This plane will be the first one to be constructed and will incorporate all the essential framework and other features of the planes which will actually be used for racing. It will be built for the sake of safety in that its strength will be thoroughly tested with bags of sand placed over the surface until these surfaces are destroyed, in order to determine the exact factor of safety of the vital parts.

It is expected that the Pulitzer races will take place during the early part of October, and the Schneider Cup Race, which is the trophy to be defended by this country against foreign competition, will be held during the latter part of October. The location of the meets has not as yet been announced and will later be determined by the National Aeronautic Association, which has cognisance over all arrangements for the holding of the races.

It is expected that the new racing planes will be delivered early in September in order to provide ample time for flight tests and practice flights prior to the actual races.

Britain's Choice!

THE Royal Aero Club have officially entered two machines to represent Great Britain in the race for the International Schneider Trophy in America.

For both machines the famous Napier "Lion" aero engine has been chosen.

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THE ROYAL AIR FORCE.

The London Gazette.

May 5.

GENERAL DUTIES BRANCH.—The following Plt. Offs. are promoted to the rank of Flg. Off. :—P. G. Chichester (Feb. 14); J. W. Colquhoun (Feb. 14); E. V. H. Jarvis (Mar. 9) (since transferred to Reserve); E. C. A. Wing (Mar. 14); H. D. Mitchelmore (Mar. 18); W. F. Langdon (Mar. 23).

Flg. Off. R. F. Carter (Lt., R.N., retired) is granted the honorary rank of Flt. Lt. (Apr. 15). Plt. Off. on probation P. E. Nicholl is confirmed in rank (Apr. 24). Wing Cmdr. P. K. Wise, C.M.G., D.S.O., is placed on the retired list (Apr. 17).

The following relinquish their temporary comns. on return to Army duty :—Flt. Lt. J. S. Windsor, M.C. (Lt., S. Wales Borderers) (Apr. 21); Flg. Off. F. St. D. B. Lejeune (Lt., R.A.) (Apr 26).

MEDICAL BRANCH.—Flt. Lt. J. K. R. Landells, M.B., is granted a perm. comn. (Apr. 29); Flg. Off. J. B. Gregor is promoted to the rank of Flt. Lt. (Apr. 30); Sq. Ldr. J. H. Wood, M.C., M.B., D.P.H., relinquishes his temp. comn. on ceasing to be employed (May 1).

RESERVE OF AIR FORCE OFFICERS.—The following are confirmed in rank :—FLG. OFFS.—G. L. Shephard (Apr. 21); R. M. Stirling, A.F.C. (May. 4). PLT. OFF.—P. H. Davies (May 4). Flg. Off. C. E. F. Searle resigns his comn. (Mar. 21).

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE.—Miss E. S. Browbank resigns her appointment as Staff Nurse, acting Sister (Mar. 29).

Appointments.

Week ending May 11.

GENERAL DUTIES BRANCH.—Squadron Leader R. M. Drummond, D.S.O., O.B.E., M.C., to H.Q., Coastal Area, instead of to R.A.F. Depot as previously notified, 1/5.

Flight Lieutenants E. F. Turner, A.F.C., to H.Q., Coastal Area, 1/5. E. R. B. Playford, to R.A.F. Depot on transfer to Home Estab., 2/4. B. D. S. Tuke, to R.A.F. Depot, 15/4. L. J. Riordan, A.F.C., to No. 99 Sqdn., Bircham Newton, 28/4.

Flying Officers H. A. J. de S. Barrow, to No. 16 Sqdn., Old Sarum, 18/5. H. G. P. Ovenden, to R.A.F. Base, Malta, 30/4. F. H. Bedford, M.C., M.M., to R.A.F. Depot on transfer to Home Estab., 16/4. T. Fetherstonhaugh, to No. 28 Sqdn., India, 1/5. D. H. Macdonald-Lawson, to R.A.F. Depot (Non-effective Pool) on transfer to Home Estab., 12/4. J. P. Hinks, to No. 3 Stores Depot, Milton, 4/5 P. J. Bett, to No. 2 F.T.S., Digby, 5/5. A. H. D. Livock, to No. 20 Sqdn., India, 1/5.

Pilot Officers G. D. Gibson, to R.A.F. Depot, 5/5. B. B. Dowling, to R.A.F. Depot on transfer to Home Estab., 12/4. M. E. de L. Hayes, to No. 2 Sqdn., Manston, 18/5.

MEDICAL BRANCH.—Flying Officers H. W. D. Mackenzie, M.B., to R.A.F. Depot, 4/5. G. J. Griffiths, to No. 1 School of T.T. (Boys), Halton, 16/5. L. C. Palmer-Jones, M.B., to I.A.A.D., Henlow, 14/5.

STORES BRANCH.—Flight Lieutenant W. A. Glasper, to R.A.F. Depot on transfer to Home Estab., 2/4. Flying Officer J. E. Truss, M.C., to C. and M. Party, Isle of Grain, 6/4.

ACCOUNTANT BRANCH.—Flight Lieutenants H. G. Bushell, to remain at Coastal Area H.Q. K. R. Money, O.B.E., to R.A.F. Base, Leuchars, 11/5. W. Rollinson, to No. 100 Sqdn., Spittlegate. Flying Officer G. W. Lynn, to No. 1 School of T.T. (Boys), Halton.

Fatal Accidents.

The Air Ministry regrets to announce that as a result of an accident at Khaniutman, Iraq, to a Bristol Fighter, of No. 6 Squadron, Mosul, on May 4, 1925, Lieut. John Ellerthorpe Griffiths, Iraq Levies, was killed, Flt. Lt. Walter Archer Bouchier Savile, R.A.F., the pilot of the aircraft, being slightly injured.

The Air Ministry regrets to announce that as a result of an accident at Brough at 3.0 p.m., on May 5, 1925, to a Blackburn Kangaroo machine, Flg. Off. Hugh Crichton McDonald, Reserve of Air Force Officers, the pilot of the aircraft, was killed.

The Air Ministry regrets to announce that as a result of an accident at Ambala, India, to a Bristol Fighter of No. 31 Sqdn., Ambala, on May 9, Flg. Off. Robert Richard Studdert Waller, the pilot of the aircraft, was severely injured, and died of injuries on May 10.

The Air Minister's Tour.

In an interview at the Air Ministry on May 8, the Secretary of State for Air, Sir Samuel Hoare, described his recent tour of the Middle East. In addition to the description of the tour given in his speech at the Academy Banquet, which was reported in full in THE AEROPLANE of May 6, the Secretary of State for Air made one or two interesting statements.

He said that he was even more convinced than before of the practicability of an aeroplane route to India, and he hoped that the part of it which lay between Karachi and Cairo, at any rate, would be started this year.

In view of this statement, the following extract from *The Times of Mesopotamia*, of Apr. 18, is of interest. :—

The cross-desert aeroplane service from Ramleh, Palestine, to Basrah, will be inaugurated in July of this year.

It is proposed to cover the 900 miles between Ramleh and Basrah in one day, with a brief halt in Baghdad, and the cost of the air trip will be £20.

When this service begins, passengers from London to India will be able to travel according to the following programme :—Leave London Thurs. noon, arrive Marseilles Friday night, arrive Port Said Wed. noon, leave Port Said Wed. afternoon, arrive Ramleh Thurs. 6 a.m., leave Ramleh Thurs. 7 a.m., arrive Basrah Thurs. evening.

Referring to the reduction of British expenditure in Iraq Sir Samuel said that a considerable reduction could be made in the near future. He could not give any details, as he had not yet submitted his report to the Treasury. It would be interesting to know whether his inspection of the six battalions of the Arab Army with Arab Officers (which are quite apart from the British-officered Iraq Levies), had any bearing on Sir Samuel Hoare's financial calculations.

Another interesting statement made by the Secretary of State for Air concerned the valuable map-making and surveying work which is being done by the R.A.F. in Iraq. He said that some of the country had never been mapped at all, and in other parts the existing maps had been found to be from 50 to 100 miles wrong.

The members of the tour experienced most of the varieties of climate to be found in Iraq. On two occasions Sir Samuel said he was held up on account of sand-storms of a most unpleasant description. Within three days he was in the heat of Basrah in April and the snow and sleet of Suliemanie and the Kurdistan frontier.

Sir Samuel said that he hoped that two big flights would take place this year, one from Cairo to the Cape and one from Cairo to Nigeria. He thought that it cheered up the people in the distant outposts of the Empire to be visited by British aircraft.

In the course of his tour the Secretary of State visited the scenes of recent excavations. In some cases, he said, these interesting remains could only be seen from the air.

On his way home Sir Samuel Hoare paid a visit to the Italian Air Service at Brindisi. He said this visit was particularly interesting owing to the fact that the Italian Air Service, like our own, had attained great heights during the War 1914-18, had almost been extinguished after the Armistice, and was now rising again on surer foundations as a Service separate from the Army and Navy.

The R.A.F. at Wembley.

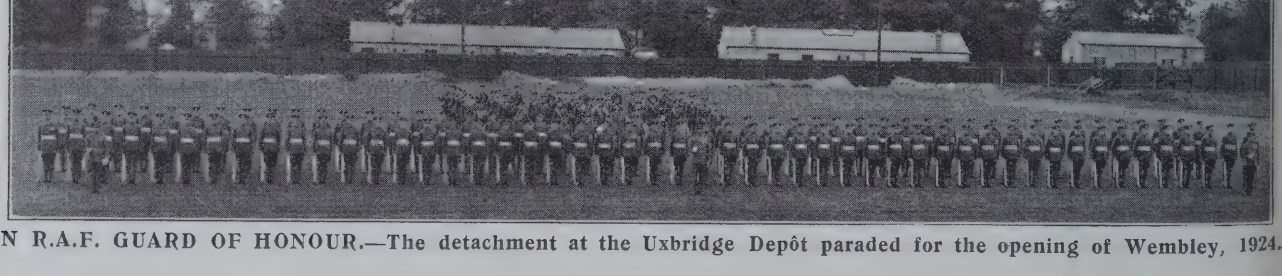
A formation of eight aeroplanes of the R.A.F. flew over the Stadium and dipped into the arena in salute at the ceremony of the re-opening of the British Empire Exhibition at Wembley, by His Majesty the King, on May 9.

A Guard-of-Honour of the R.A.F., commanded by Flt. Lt. A. Wombwell, showed that in perfection of march discipline and drill they are at least the equals of the Senior Services.

A prominent part is taken by the R.A.F. at the Display in the Stadium which will take place every night at 8.15 until May 30. The programme opens with the entry of and music by the massed bands of the Royal Air Force, Royal Marines and Metropolitan Police. This is followed by a display of horsemanship by the police.

The Scottish scene, which comes next, is exactly the same as the one staged at the Tattoo last year. The form of training which enables the pipers of the London Scottish to march straight up about 250 steps piping furiously all the time, must be highly effective.

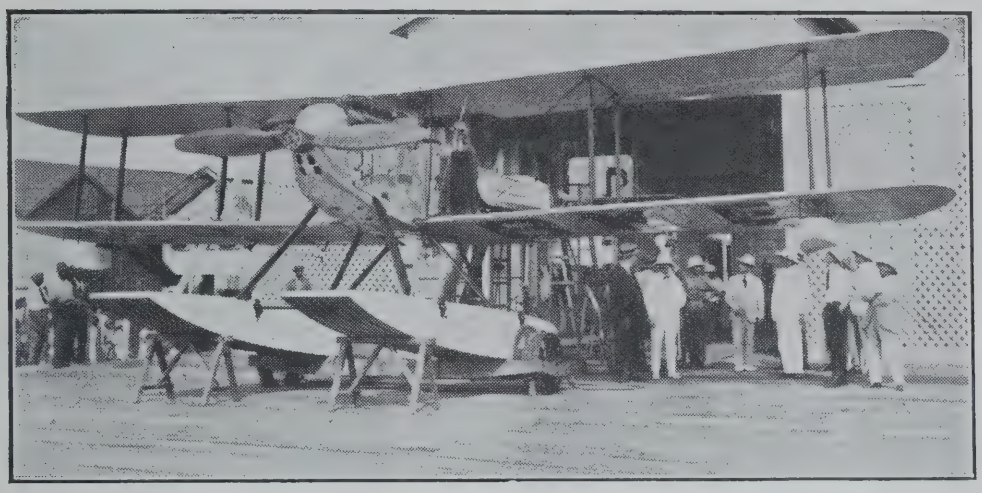
A combined demonstration by the R.A.F. and the London Fire Brigade shows the bombing of an expensive-looking house by two Snipe from No. 32 Squadron, and the rescue of the hysterical occupants by the Fire Brigade. It is a regrettable fact that the British public's most enthusiastic cheers were reserved for the death-dealing aircraft. The anti-aircraft guns and searchlights of the London Air Defence



AN R.A.F. GUARD OF HONOUR.—The detachment at the Uxbridge Depôt paraded for the opening of Wembley, 1924.

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THE OPENING CEREMONY OF THE FAIREY AMBULANCE AIR SERVICE IN BRITISH GUIANA.

This was performed by Sir Graeme Thompson, K.C.B., governor of the Colony.
The object of this air route is the transport of fever patients from the inland estates of the Real Daylight Balata Company to hospital in Georgetown. The only other means of communication with the interior is by river which takes upwards of 17 days: by air the same journey is made in two hours.

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Brigade then come into action and the raiders are driven off.

This bloodthirsty exhibition is followed by a Grand Musical Ride in which 32 files of policemen's horses fox-trot to the music of the Policemen's band. The Great Fire of London is a spectacular pageant carried out with a lot of smoke and fireworks.

About the best thing in this splendid show is the marching and counter-marching of the massed bands, with torch-bearers of the R.A.F.

An Award.

The Chadwick Trustees announce that the prize of £100 and the gold medal for "specially assisting in promoting the health of the men" of the Service to which he belongs has been awarded to Wing Cdr. Harold E. Whittingham, R.A.F.M.S., who "by his work on sand-fly fever has done more than any other officer in recent years to promote the health of the men of the Royal Air Force." The award is made once in five years to a medical officer of one of the Services.

The prize and gold medal will be publicly presented to Wing Cdr. Whittingham by Sir William J. Collins, chairman of the Chadwick Trust, in the Barnes Hall, Royal Society of Medicine, at 5 p.m., May 25, immediately before the Chadwick Public Lecture by Dr. Emile Brumpt (Professor of Medicine at Paris University), on "How to conduct an Anti-malarial campaign."

A Post-War Iraq Dinner.

It is proposed to hold this dinner at the Holborn Restaurant at 8.15, for 8.45, on the evening of June 27, 1925 (the day of the R.A.F. Display).

All tickets must be applied for before June 1, 1925, and a remittance must accompany the application, together with a statement of the unit with which the officer served.

The dinner will be purely for R.A.F. Officers who have served in Iraq since the Armistice and admittance will be by ticket only.

Air Marshal Sir John Salmond, K.C.B., C.M.G., G.V.O., D.S.O., has kindly consented to take the chair, and Air Commodore A. E. Borton, C.B., C.M.G., D.S.O., to act as Vice-Chairman.

Tickets, 12s. 6d., exclusive of all wines, on application to R.A.F., Iraq Dinner Committee, A. and A.E.E., Martlesham Heath.



A MATTER OF HISTORY.—An illustration of one of Flt. Lt. Verpilleux's pictures, coloured reproductions of which may be purchased from the R.A.F. Memorial Fund.

Pictures for the Mess.

Coloured reproductions have been made and are now available of nine pictures by Flt. Lt. Verpilleux, the originals of which were presented by the artist to the Officers' Mess of the Electrical and Wireless School, Flowerdown.

The pictures are about 12 inches by 9½ inches, on grey mounts, and illustrate the wireless work of the R.F.C. during the War 1914-18.

A set of nine signed copies may be had for £3 3s., and unsigned for £2 2s. Single copies are 8s. 6d. signed, and 5s unsigned.

There is a particularly good picture of a night-flying F.E.2b with searchlights discovering it in the air, and another excellent piece of work is a picture inside a wireless hut, with a young operator listening and sending. One would never have imagined that a face surmounted by head-phones could be beautiful, and yet here Mr. Verpilleux has made it so.

The reproductions may be obtained from the offices of the R.A.F. Memorial Fund, 7, Iddesleigh House, Caxton Street, Westminster, S.W.1. The entire proceeds of the sale of these pictures, less the cost of packing and postage, will go to the R.A.F. Memorial Fund.

Air Affairs in Parliament.

In the House of Commons on May 6, Lieut.-Colonel Watts-Morgan asked the Prime Minister whether, in view of the fact that Miss Violet Douglas-Pennant has refused to accept the letter written to her on behalf of the late Prime Minister as satisfactory reparation, he will have further inquiry made into the case?

The Prime Minister (Mr. Baldwin): No, Sir. The letter addressed to Miss Douglas-Pennant on Apr. 30, 1924, represents the views held by the late Prime Minister; by myself; and by our predecessor in office, Mr. Bonar Law.

Lieut.-Colonel Watts-Morgan: Does the Prime Minister understand that this question is causing great excitement and anxiety in Carnarvon Boroughs in particular and in Wales in general?

The Prime Minister: I know there has been excitement sporadically arising for some years past, but I do not know it is greater now than it has been.

[It is to be hoped that this matter will now be allowed to rest. It is surely sufficient that the Force which under Miss Pennant's rule was in a state of chaos became a highly efficient corps under her successor. The phrase "excitement sporadically arising for some years past" deserves to become historic.—Ed.]

In the House of Commons on May 7, Sir G. Strickland asked the Secretary of State for Air whether he is aware that officers of the R.A.F. have resumed duty after forced landings that broke two or four limbs; and whether, in view of this example, he will consider the advisability of granting additional emoluments, in the shape of pay or pensions, to Air Force officers that have received serious injuries on duty?

Sir S. Hoare: An officer who sustains injuries of the nature referred to in the question does not resume duty in the R.A.F. unless and until he is reported fit for service by a board of medical officers. When the injury is caused by flying duty the normal period of sick leave on full pay is 12 months, which may be extended up to a further period of six months. The suggestion contained in my hon. Friend's question is, in effect, one for the reintroduction of a system which was very fully considered and rejected in 1921, and I do not see any good reason for a reconsideration of that decision.

AMERICAN DEFENCES IN THE PACIFIC.

Although the Government of the United States naturally refuses to admit that there is any possibility of a war with Japan, and although the diplomatists of each nation protest everlasting friendship for the other, the fighting Services make no such pretences. Consequently the following note from *The Times* correspondent in New York, dated May 7, will be found of particular interest.

At the conclusion of an officers' conference, which lasted for five days after the United States joint Army and Navy manœuvres on Hawaii, the umpires have issued a short *communiqué* acknowledging that the operations had disclosed certain deficiencies in the island defences, as well as in the Fleet. Unofficial accounts from Honolulu give some details of these deficiencies.

The primary naval requirement is a deepening of the entrance to the channel into Pearl Harbour to 45 ft. The present channel was cut 15 years ago through a coral reef, and has a controlling depth of 32 ft., though modern battleships draw at least 34 ft.

For the past week the Fleet has been anchored outside off Honolulu but after a naval engagement it would be necessary for lame ducks to enter immediately for dry docking without waiting for spring tides. Furthermore, the three naval wireless towers situated near the dry dock would be an excellent ranging post for an enemy fleet shelling the harbour.

The aeroplane and seaplane bases have proved to be overcrowded and to be inadequate for rapid landings and departures.

The Army aeroplanes, of which 60 per cent. are obsolete, lacked cruising radius and were unable to pick up the invading Blue Fleet even 12 hours before the actual Blue landing was made.

The whole military defence system is concentrated on Oahu, which alone possesses suitable natural features for a permanent naval base.

The war game disclosed deficiencies in troops, heavy guns, and communications. The garrison is said to require an increase of from 14,000 to 25,000 all ranks in order to be able to repulse a theoretically possible landing force of 40,000 soldiers. Some of the heavy guns lacked gun detachments. There are no guns on the north-west coast where the Army authorities desire to see a minimum of four 16 in guns to outrange an attacking fleet's armament.

There is an insufficiency of strategic highways, which would severely handicap military movements across the island.

The members of the United States Congress accompanying the Fleet seemed to have been much impressed by the disclosures.

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SOME LESSONS FROM 1924.

On Friday, May 8, Capt. W. H. Sayers read before the Institution of Aeronautical Engineers a paper bearing the title Lessons of 1924.

The paper had originally been announced under the title of A Resumé of Achievements in Aviation in 1924. The author explained that when he came to review the matter which was avaialable under this title he had found that if he had attempted to cover the ground with any completeness his paper would have become a catalogue of events sufficiently extensive to occupy the whole of the time without leaving room for comment. He had therefore chosen certain of the achievements of the year 1924 and had used them as pegs whereon to draw conclusions as to the progress which was evidenced by them.

The Great Flights of 1924.

On the whole he thought 1924 had been a year of steady if perhaps uneventful progress. It had however been marked by a number of notable performances. Of these the first flight Round the World by the American Army team probably deserved first mention. This flight did not however stand alone, for the same year was marked by a number of other great long distance flights—such as the two round Australia—one by Wing Cmdr. Goble and Flt. Lt. MacIntyre on a Fairey seaplane, and the other by Col. Brinsmead, Capt. Jones and Mr. Buchanan on a D.H.50. There were also the Amsterdam—Batavia flight by Mr. Van der Hoep on a Fokker with a Rolls-Royce engine, and although not altogether a 1924 affair Sir Sefton Brancker's 17,000 miles' tour on a D.H.50 piloted by Mr. Cobham might be included amongst the series. This list was not exhaustive, but he thought it was sufficient to demonstrate that the aeroplane of to-day, handled by competent personnel, had become a safe and reliable method of transport and could be regarded as a tried and proved method of giving rapid transport facilities over practically any part of the earth's surface. Except in the case of the American world flight all the journeys he had mentioned were carried out on standard civilian types of aircraft handled by civilian pilots, and were marked by no damage of any kind to the personnel and by singularly few untoward incidents even of a trivial nature.

As against this excellent record of the long distance routes there was unfortunately a lamentable accident to an Imperial Airways machine at Croydon on Christmas Eve, and there were certainly those who felt that one such accident as this proved more as to the danger of flying than all the great performances of the past year proved to the contrary. The author did not accept this view as sound, and regarded accidents such as this one as having little real bearing on the progress which is actually being made.

The Relativity of Safety.

In his opinion the routes between England and the Continent gave no fair measure of real utility of aircraft for commercial transport. These routes operated under very unfavourable conditions for the aeroplane and they had to compete with a very cheap and rapid surface transport system which had in the past century developed a very high standard of reliability and safety. Inevitably the air service was compared with the rail and boat system with which it competed to the considerable advantage of the latter.

Statistics of accidents on the basis of ton or passenger miles per accident were of little value in the case of aircraft because of the limited data from which they were drawn. Nevertheless they were often compared in this country with similar statistics for the British Railways. If, however, these were compared with those of some other railway systems the appearance of the air line figures improved considerably and the author thought that it should be recognised that air transport undertakings safety and reliability could only be regarded as relative after taking all the conditions into account.

Even between London and Paris air transport was safer than rail and boat if goods and not passengers were considered, as the risk of loss from accident to the aircraft was less than the risk of pilferage or loss in transfer from boat to train and train to boat by the alternative route.

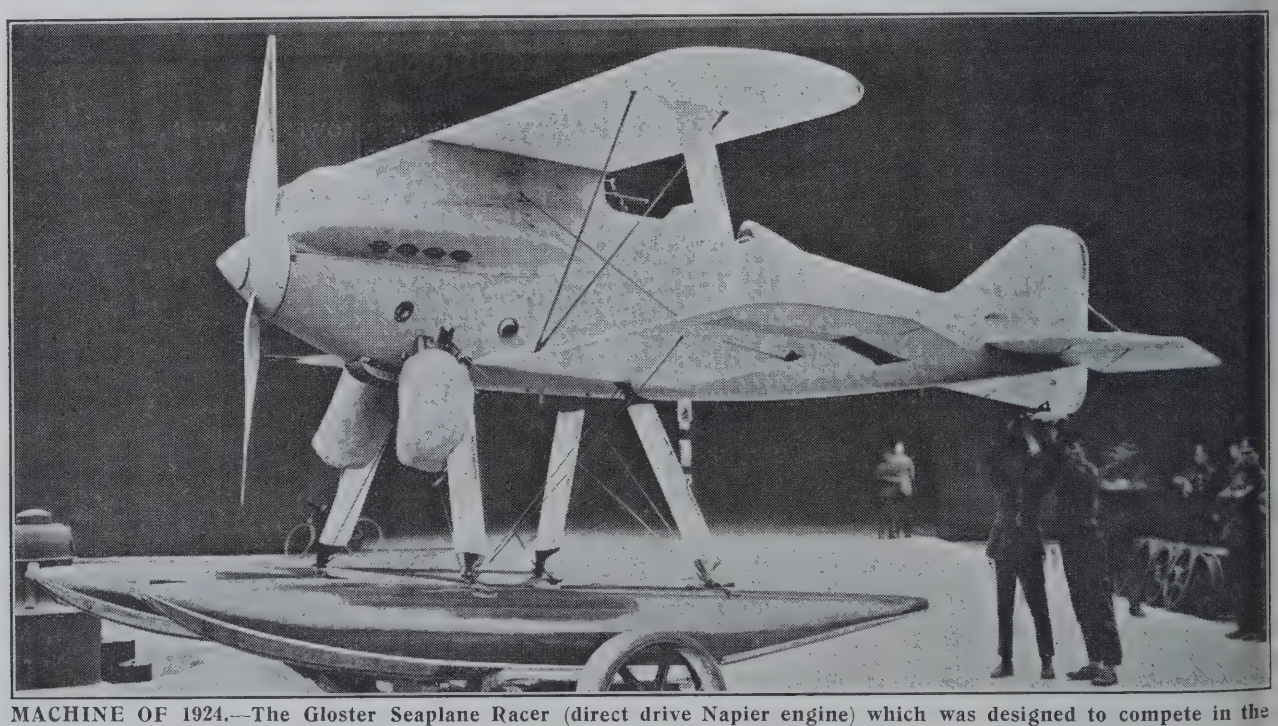
A striking example of the relativity of safety might be found in the seaplane ambulance service between Georgetown, British Guiana, and certain plantations 200 miles up river. Air transport over this route is probably considerably more dangerous in the absolute sense than it is between London and Paris. But the alternative in this case is ten days or a fortnight of canoe travelling with frequent porterages, which means fairly certain death to fever-stricken or badly-injured patients. The seaplane gives safe and rapid transport to a well-equipped hospital in healthy surroundings.

This subject of the relativity of danger is of some importance. There are certain inherent dangers in flying and it cannot be expected that after four or five years of practical development air line services shall achieve the standard of reliability and safety achieved on the world's finest railroad services with a century of experience behind them. But man has to travel over many routes which cannot possibly be covered by such railway services of this standard for many years to come, and if on such routes aircraft can give quicker, cheaper, safer and more reliable transport than is otherwise possible, the fact that that service is less safe and reliable than a railway somewhere else is irrelevant.

The long distance flights of 1924, together with many others of recent years, do give evidence that the aeroplane is reliable enough and safe enough for commercial development on a very considerable scale, and the author expressed the view that the operations of the British Air Lines by challenging comparison with British railways had given the British public an impression of the relative unsafety of flying when an equal record of reliability on routes served by less highly developed alternative systems would have produced a truer impression of the safety of the aeroplane.

Racing in 1924.

Reviewing the sporting events of the year, the author said that all the great speed races for aeroplanes throughout



A MACHINE OF 1924.—The Gloster Seaplane Racer (direct drive Napier engine) which was designed to compete in the race for the Schneider Cup.

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C.P.



ANOTHER MACHINE OF 1924.—The English Electric Co.'s Ayr (Napier Lion engine) in which the bottom wings are designed to act as balancing floats.

the world had been failures. The race for the Deutsch Cup was a "walk-over," the Pulitzer Trophy race drew no foreign competitors and was marred by a bad accident, and was won at a lower speed than in the preceding year, the Schneider Cup race was abandoned from lack of competition, and the Aerial Derby from lack of entries. However, he did not believe that this indicated any early end to attempts to increase the maximum speed of aircraft, or any lack of interest in racing aeroplanes. What had happened was that America, having spent a great deal of time and money on the development of the high speed aeroplane, had gained so great an advance in this respect that she could afford to rest on her laurels and apply her experience to practical ends.

The other nations had been spurred on by the American results of 1923 to attempt to wrest the racing honours from her, but had not found it possible to produce machines which would equal the American racers in time for last summer's races. France, however, had now recovered the world speed record and there was good reason to suppose that speed racing in 1925 would be much more exciting than in 1924.

The Value of Freak Designs.

In some quarters there was a tendency to regard high speed racing as an unnecessary waste of money and risk of life. Machines capable of 250 m.p.h. or so were undoubtedly extremely costly and distinctly dangerous to fly. But racing had indirect results of the greatest value. He (the author) was convinced that sporting contests for aircraft ought to be conducted under rules which encouraged what might be called "freak" design. When an aeroplane is designed for a specific useful purpose the designer is forced to compromise between various incompatible qualities. As long as he never does anything except compromise he cannot know accurately what his compromise is costing him. When he throws compromise overboard and goes "all out" for one particular quality regardless of all others he learns something of what he is sacrificing in the more usual case.

When the fastest machine in the world had a speed of 100 m.p.h. a single-seat scout of 75 m.p.h. which could be entrusted to a good military pilot would have been a remarkable machine. When the speed record rose to 180/200 m.p.h. single-seat fighters of 150 m.p.h. with full equipment became practical propositions. Now that the speed record is over 250 m.p.h. the fighter of 175/180 m.p.h. is already in existence.

It was unfortunate that speed was practically the only "freak" quality encouraged in competitions. The 1923 Lympne Light Aeroplane Meeting had encouraged freak economy, and the success of that meeting as compared to the 1924 Light Aeroplane Meeting was evidence in favour of the "freak" type of contest.

It was not suggested that the 1924 Light Aeroplane Meeting was a failure, but it did fail to produce the training machine, which was the ostensible object of the contest. That failure was not altogether due to the rules of the meeting, but it was generally the case that complex rules designed to produce useful aeroplanes generally failed of their purpose. The reason was simple. The designer designed to beat the rules and not to produce the machine



The Gloucestershire Aircraft Co.'s Grouse II, an advanced training machine with the Siddeley Lynx engine.

D·H

"AN IDEAL ONE—MAN SHIP FOR CROSS COUNTRY TRAVEL."

An American Press Opinion.



THE DE HAVILLAND "MOTH"
TWO SEATER LIGHT AEROPLANE
27-60 H.P. CIRRUS ENGINE.

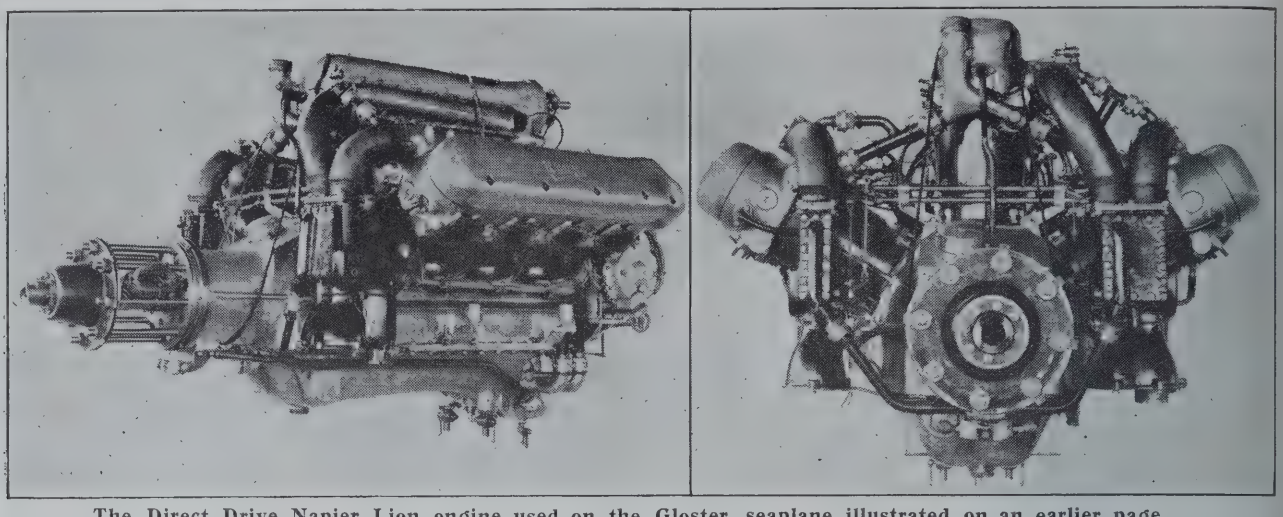
"Our English cousins are demonstrating to a skeptical world that a really fine light aeroplane can fulfil the optimistic promises made for it. The DE HAVILLAND 'MOTH,' for example, proves to be capable of a reasonable speed range, is ruggedly built and the fortunate selection of a trustworthy low-powered engine places it in the practical class of 'light' aeroplanes."

The machine's ability to rise from and alight upon rather unfavorable terrain with relatively little difficulty, makes it an ideal one-man ship for cross country travel."

"Aero Digest," New York, May, 1925.

THE DE HAVILLAND AIRCRAFT CO., LTD.
STAG LANE AERODROME,
EDGWARE, MIDDLESEX.

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The Direct Drive Napier Lion engine used on the Gloster seaplane illustrated on an earlier page.

the rule-makers wanted. And as the designer generally knew rather more accurately what he could do than the rule-maker, the designer generally won.

In conclusion, the flight of Z.R.III from Friedrickshafen to Lakehurst was mentioned as the event which might hereafter come to be regarded as the most significant of all during 1924. It was perhaps only a coincidence that it should have practically synchronised with the revival of airship activity in this country, but it seemed impossible to doubt that the airship would in time become one of the most important of long distance mail and passenger carrying agencies.

New Technical Literature.

U.S. National Advisory Committee for Aeronautics: Report No. 199.—Interference Tests of an N.A.C.A. Pitot Tube. By E. G. Reid.

Report No. 202.—The Sparking Voltage of Spark Plugs. By F. B. Silsbee.

Report No. 203.—Acceleration in Flight. By J. H. Doolittle.

Report No. 205.—The Effect of Changes in Compression Ratio upon Engine Performance. By S. W. Sparrow.

Report No. 211.—Water Model Tests for Semi-Rigid Airships. By L. B. Tuckerman.

Technical Note No. 213.—Discharge Characteristics of a High Speed Fuel Injection Engine. By R. Matthews.

Technical Note No. 214.—Note on the Katzmayr Effect on Airfoil Drag. By Shatsweel Ober.

Technical Note No. 215.—The Calculation of Wing Float Displacement in Single Float Seaplanes. By E. P. Warner.

Aeronautical Research Committee: R. & M. No. 934.—Wind Channel Tests on Radiators. By R. G. Harris and W. K. Alford. Price 1s. net.

R. & M. No. 942.—The Royal Aircraft Establishment Control Movement Recorder, Mark III. By D. A. Jones and H. L. Stevens. Price 6d. net.

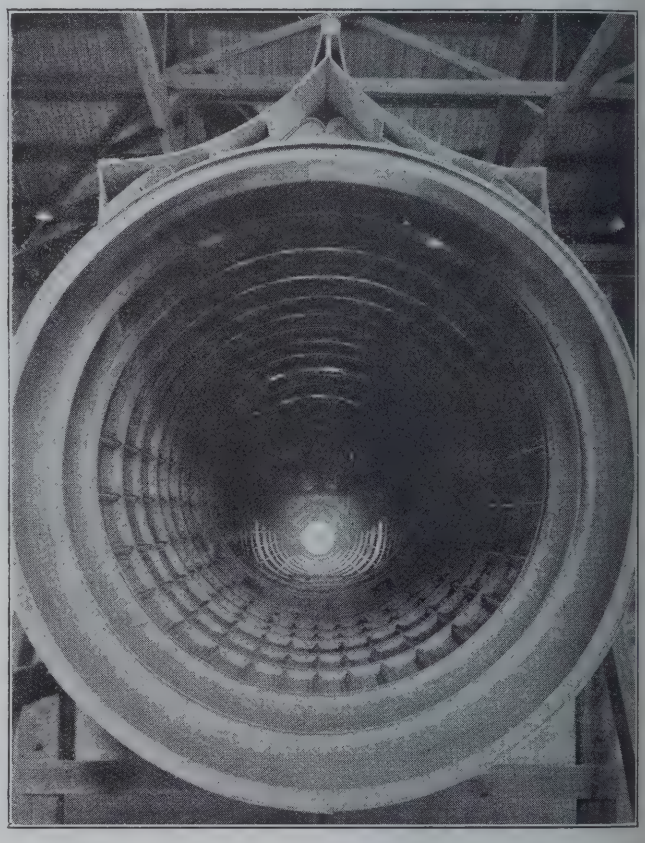
R. & M. No. 943.—Tests of Three Aerofoils Suitable for High Speed. A.D.I., Sloane and R.A.F. 26. By F. B. Bradfield and A. S. Hartshorn. Price 6d. net.

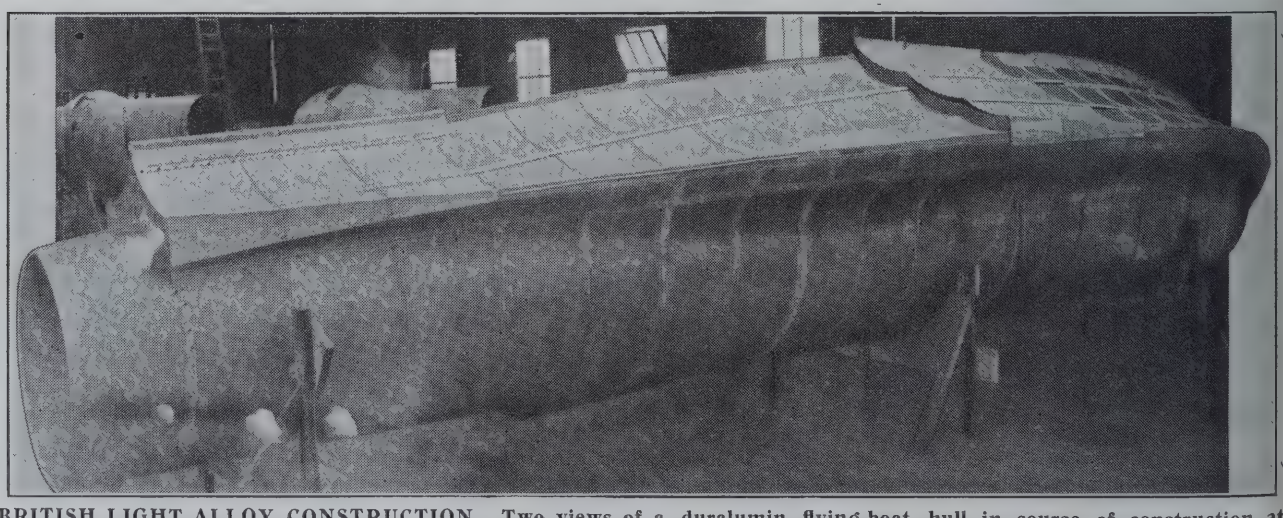
R. & M. No. 944.—Measurement of Pitching Moments due to Roll on Wing of Avro 504K. By F. B. Bradfield. Price 4d. net.

R. & M. No. 945.—Lift and Drag of Junker Monoplane. Comparison of Model with Full Scale Results. By B. D. Clark, L. P. Coombes, H. Glauert and A. S. Hartshorn. Price 9d. net.

R. & M. No. 946.—The Theory of the Design of Aerofoils with an Analysis of the Experimental Results for Aerofoils R.A.F. 25, 26, 30 to 33. By H. G. Glauert. Price 6d. net.

R. & M. No. 948.—An Experimental Investigation into the Properties of Certain Framed Structures having Redundant Bracing Members. By A. J. Sutton Pippard and J. F. Baker. Price 1s. 3d. net.





BRITISH LIGHT ALLOY CONSTRUCTION.—Two views of a duralumin flying-boat hull in course of construction at the works of Short Bros. Ltd., Rochester.


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SEAPLANES &
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Parachutes.

The following paragraph is taken from *The U.S. Army Air Service News Letter* of Apr. 20 :—

BRITISH FLYERS MAKE PARACHUTE JUMPS.—Group Captain M. G. Christie, Air Attaché of the British Embassy, Flight Lieut. Soden and Flying Officer Lacey of the British Air Service, successfully accomplished live jumps from De Havilland planes at a height of 2,000 feet over Chanute Field recently. This series of parachute jumps was an excellent demonstration of the feasibility of the practical operation of this factor of safety in connection with its adoption to passengers or persons having little or no knowledge of parachutes, for Captain Christie had but an hour or more of instruction before making his jump. Lieut. Soden and Flying Officer Lacey spent a week at the Air Service Technical School at Chanute Field taking intensive training in parachutes.

For the Pacific.

According to *Aero Digest* of May, 1925, the U.S.S. *Saratoga* was launched at Delaware on Apr. 7. The *Saratoga* was originally one of the six battle-cruisers authorised by the 1916 programme. At the time of the Washington Conference she was one-third completed and permission was granted to the United States to convert her and her sister-ship, *Lexington*, into aeroplane carriers.

The *Saratoga* is the first vessel constructed for the United States to act as an aeroplane base. She will carry 72 machines, half of which will be of heavy-duty type, including bombing and torpedo machines.

Her maximum beam at the flying deck is 105 feet, and her tonnage 35,000. Her main battery will consist of eight 8-inch guns. Her speed will be between 33 and 34 knots.

Aero Digest states in conclusion :—" The nearest approach to the *Saratoga* by other naval Powers are the airplane-carriers being built in Japan. These are almost identical in size with the American vessel but are considerably slower. The British Government is also constructing airplane-carriers of great power, but these, too, are regarded as inferior to the United States fighting craft."

According to Jane's *Fighting Ships*, the British aircraft-carrier *Furious* has a speed of 32.33 knots and a displacement of 19,100 tons. *Furious* has ten 5.5-inch guns, five 5.3-inch, and two A.A. 3-pdrs. The aircraft-carrier *Eagle* has a displacement of 24,790 tons and a speed of 24 knots. She carries twelve 6-inch guns.

Air War in Morocco.

A Reuter message from Paris, dated May 10, states that M. Painlevé, in a statement on May 9, insisted that the Riff advance towards French territory was an invasion whose object was to force the French to evacuate all the territory they occupy as far as Fez. The movement would be repressed with the utmost energy.

General Niessel, Inspector-General of Military Aeronautics, has been given a mission in Morocco.

A correspondent of *The Intransigeant*, an Algerian newspaper, not the Parisian publication, asserts that the reports that the Riffi possess a large air force are incorrect. It says that Abdul Krim has only one aeroplane, for which he paid ten times its proper price and that it has only flown for 40 minutes.

A Reuter message from Paris, dated May 9, states that reinforcements, including two squadrons of Air Bombers from Metz, have entrained for the front.

One French rumour says that Abdul Krim's aeroplane was captured from the Spaniards, but that does not account for its having a pilot. Apparently the Riffs are desirious of having complete national independence and are now trying to free themselves from French as well as Spanish control.

The Afghan Air Force.

The Times of May 7 states :—

According to the Frontier correspondent of the *Pioneer*, the Afghan Air Force contains 15 machines, of which at least seven are airworthy. The members of the *personnel* from Russia are believed to be capable airmen. Fifty young Afghans have been sent to Russia to be trained as airmen. The only aeroplane shed at present is that at Kabul, but it is said that others will shortly be erected at Herat, Kandahar, Muzarisharif, and Jelalabad.

Evidently vast improvements have taken place since the last rumour capable of catching the last mail from India left Kabul. And unless the fifty young Afghans happen to be Bolshevistically inclined, they would hardly go to Russia for training. And if they should be Bolsheviks they can scarcely be in the service of the Amir.—C. G. G.

The Curtiss Company's Report.

A Report of its operations during the past year has just been issued by the Curtiss Aeroplane and Motor Co. Inc., the leading American aircraft firm, which report should be of considerable interest to the British Aircraft Industry as indicating the general state of affairs in the American Aircraft Industry. A proper understanding of the respective positions of the American and British Trades cannot fail to be of value when the two nations have to work together in the next war.

It may be remembered that the finances of the Curtiss Company became considerably complicated two or three years ago although the firm was always actually solvent. Mr. C. M. Keys took in hand the general reorganisation of affairs and the current report shows how satisfactorily he is accomplishing his task. The report reads as follows :—

The financial results of the operations of your company for the year 1924 are submitted herewith. These results show steady progress in the liquidation of capital employed in the business, along the lines laid down in the annual report for the year 1923.

During the year your company has reduced its funded and other indebtedness $966,731.04; while the reduction of cash assets other than inventories, during the same period, has been only $136,675.67. The working capital position of the company is stronger than it has been at any time, there being practically no current liabilities. The Curtiss Field at Mineola and the experimental plant at Garden City have been cleared of mortgage debt.

The net earnings after full depreciation amounted to $156,228.16, a large part of which was derived from commercial operations as distinguished from Government contracts. The Directors have declared, for the period, dividends of $6.00 on the preferred stock of the company.

The sharp competition from Government plants, and the destructive competitive bidding on Government contracts, noted clearly in last year's report, continued throughout the early part of 1924, especially from the Navy. Toward the close of the year there was a distinct betterment in both respects, especially in respect to Army contracts, due to the fact that the leaders of the Army Air Service made an intelligent study of the matter and began, of their own volition, to shift their policy with regard to the placing of contracts.

Throughout most of the year, a special committee of Congress, appointed to make a broad study of aviation as a whole, was in session. The work of this committee seems to be distinctly constructive and its preliminary comments seem to indicate that Congress will take a stand against the destructive tendencies that have grown up in the Air Services since the close of the War.

As indicated in last year's report, your company has not risked its capital in large experimental advances as it had in previous years but it has, nevertheless, during the year, produced some notable advances in the art.

The development of the Reed metal propeller has been pushed forward steadily and is now a substantial source of revenue to your company.

Two standard commercial types of airplanes have come out of the engineering division, one of them a mail ship for the Post Office Department, and the other a purely commercial airplane. Both show fair promise of success.

In the military types the Curtiss C-S was adopted during the year by the Navy as a standard light bomber, scout and torpedo plane, but no production contracts resulted to your company owing to the fact that your company was unwilling to build these airplanes below what it considered a fair price.

A new two-place observation ship for the Army is considered one of the best engineering models that your company has produced during its history and promises to be a good source of business both at home and abroad for some time to come.

In the development of motors, excellent work has been done by the engineering division of your company. For the first time, your company entered the field of the air cooled motor and produced, for the Army, a type of high promise. This motor is still entirely in the development stage but enough has been done to indicate that it has large possibilities.

The successor of the famous D.12 Curtiss motor was developed during 1924 and passed the fifty hour test in February, 1925. This motor, while some fifteen pounds lighter than the D.12, delivers approximately 25 per cent. more power and is considered by competent engineers to be almost as great an advance as was the D.12 itself, which brought back to the United States the speed records of the World and held them for nearly three years.

It is not possible at this time to outline very definitely the policies of your company for the coming year. Aviation is in a curiously uncertain state. After five years, during which period the industry as a whole has dwindled as a result of policies or lack of policies of the Government Departments, public opinion appears at this time to have taken a definite constructive turn. The policies of your company will be determined when that public opinion has crystallised into definite Government policies.

In the meantime, the commercial branches of your company's business are being pushed forward; the engineering nucleus of your company is being maintained; markets are assiduously sought in Europe, South American and the Orient, both commercial and military; overhead costs are carefully controlled. Your company is ready to move forward or to maintain a cautious attitude as conditions may warrant.

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STRONGER AND MORE DURABLE THAN METAL.
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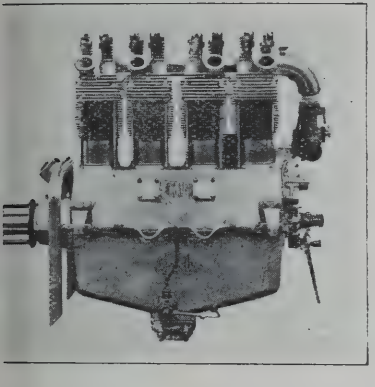
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THE 27/60 h.p. "CIRRUS" HAS SUCCESSFULLY PASSED

THE BRITISH AIR MINISTRY

TYPE TEST OF 100 HOURS.

This is the First and Only British Low Power Aero Engine to complete the 100 hours type test.



ORDER OF TEST.

10 hours on Heenan & Froude Brake	54 H.P.	at	1,800 r.p.m.
50 hours on Calibrated Propeller	54.5 H.P.	at	1,820 r.p.m.
39 hours on Heenan & Froude Brake	54 H.P.	at	1,800 r.p.m.
1 hour on Heenan & Froude Brake (Full throttle at normal revs.)	61 H.P.	at	1,800 r.p.m.
1 hour on Heenan & Froude Brake (At high revs.)	—		2,080 r.p.m.
1 hour on Heenan & Froude Brake (High power and high revs.)	68.25 H.P.	at	1,980 r.p.m.

Average Consumption.

PETROL, ·627 PTS. /B.H.P./HR. (approx. 4·25 galls. per hour at normal H.P.)
OIL ·0134 PTS. /B.H.P./HR. (less than 1 pt. per hour).

This engine has been approved and adopted for supply to the Air Ministry Light Aeroplane Club Scheme.

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 19; Tuesday, 20; Wednesday, 21; Thursday, 18; Friday, 18; Saturday, 19; Sunday, 10.

IMPERIAL AIRWAYS LTD.

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 78, passengers 215, freight 8 tons.

AIR UNION:

Paris—London: Machines 33, passengers 125, freight 12 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 44.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

DE HAVILLAND AIRCRAFT CO. LTD.

Machines 3, passengers 2.

Total number of trips by British machines: 80, carrying 213 passengers. Foreign machines: 45, carrying 169 passengers.

Comparative Figures:

For week ending May 10:

Machines, 125; Passengers, 386; Crews, 158; Total personnel, 544.

Corresponding week, 1924:

Machines, 86; Passengers, 211; Crews, 128; Total personnel, 339.

Corresponding week, 1923:

Machines, 109; Passengers, 444; Crews, 177; Total personnel, 621.

Corresponding week, 1922:

Machines, 114; Passengers, 215; Crews, 186; Total personnel, 401.

Corresponding week, 1921:

Machines, 75; Passengers, 230; Crews, 90; Total personnel, 320.

Corresponding week, 1920:

Machines, 84; Passengers, 103; Crews, 87; Total personnel, 190.

Croydon Notes.

AT THE SIGN OF THE BLUE BALLOON

There appears to be that dearth of news, sensational or otherwise, at Croydon, which is the bane of those who are compelled to write such columns as these, but which, after all, goes to show that the London Terminal Aerodrome, and all its works, is running with well-oiled machinery along the smooth paths of efficiency. Time was when machine, pilots and ground staff gave food for comment almost daily, when a pilot might precipitate himself through one's office window off a high-speed motor-bike, or greet one with a well-directed loaf of bread as one timidly entered the old Trust House in search of news items. It gives one to think that those days are indeed past when one realises that of all the Airco pilots, Mr. Armstrong is the only one now flying upon the airways.

Monsieur Richard, a mechanic in the employ of Air Union, has been presented with the Carnegie Medal and a gold watch on account of his feat of climbing out onto the wing of a Goliath over the Channel to hold a broken petrol pipe together, thus enabling a Monsieur Portul, the pilot, to complete the Channel crossing in safety. It is said that a number of British and Dutch pilots and mechanics, whose chronometers are of American varieties, are practising with a view to performing similar feats.

A son of General Weygand, the famous French General, has joined Air Union as a pilot.

Passing down the Haymarket recently one was struck by the extremely good window display at Number 32, the home of Air Union. Not only is the eye of the passer-by caught by the flicker of revolving propellors upon a model aeroplane but his attention is gently held by a number of interesting photographs and pithy announcements. The back cloth is artistically and strikingly arranged in the manner of Wardour Street, so that aviation is really thrust upon the notice of the wayfarer in a manner which all the revolving glass globes and lifeless model aeroplanes which are to be found tucked away in corners of windows devoted to tourism and shipping, cannot hope to equal.

Mr. Van der Hoop is back in London, and on Monday night his voice was heard by listeners-in, telling of his Amsterdam-Batavier flight. He is to lecture before the Royal Society of Arts on Wednesday, and a dinner is being given in his honour on Thursday evening by the Anglo-Batavian Society Mr. Van der Hoop speaks very enthusiastically of the splendid assistance and welcome which he experienced everywhere along the route where he was on British territory.

Mr. Mackintosh is back again with Imperial Airways. It is understood that he was on leave from Imperial during the period when he flew for Northern Air Lines and that his leave is now up.

K.L.M., it is stated, have acquired, or are about to acquire, the Napier-Fokker F.VII for their fleet. With a number of such machines it would appear likely that a very fine show could be put up.

Air Mails.

The Postmaster-General announces that letters may now be posted for transmission by new Air Mails to Switzerland (serving also Italy), and to the western parts of the United States, and by certain additional or resumed Air Mails to France, Germany and Denmark (serving also Norway and

Aeroplane Works—PANDER—
THE HAGUE (HOLLAND).



THE "PANDER" SINGLE-SEATER WITH 25 H.P. ANZANI ENGINE.

THE BEST LIGHT 'PLANE IN THE WORLD.

Price £450 (FROM FACTORY) COMPLETELY EQUIPPED.

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SCHEME T.2.S possesses a unique and hitherto unknown quality, *i.e.* :—

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Telegrams: "Tetrafree, Piccy, London." Telephones: Regent 4728; Gerrard 2312.
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Sweden). Particulars of these mails may be obtained from any Post Office.

Letters intended for transmission by Air Mail may be registered but not insured and may be posted in any of the ordinary ways of posting. Each letter should bear in the top left-hand corner of the cover a blue official "Air Mail" label (obtainable free at any Head or Branch Office) or be very plainly marked "By Air Mail"; and it must be prepaid with a special fee in addition to the appropriate ordinary postage.

The Lancashire Aero Club.

The following has been received from the Chairman, Mr. J. F. Leeming, Owlpen, Bowdon, Cheshire.

The Lancashire Aero Club is now in a very strong position and has 219 members. A General Meeting, Concert and Dance was held recently. The Manchester Club room is being used; a Library is being formed and the flying and motoring papers are taken. Meals may be obtained in the Club dining-room.

The L-P-W. Glider is being fitted with a 746 c.c. Douglas engine, and is being entirely reconditioned by the members themselves. It will be ready early in June and will then be used for instruction for taxying purposes only. Delivery of the two D.H.60s is also promised for June. The Avro 504K, presented to the Club by Colonel Darby, of The Aircraft Disposals Co. Ltd., is to be reconditioned and it is hoped will be ready for flying this season. It is fitted with a 80 Renault engine.

Mr. George Parnall, of Messrs. George Parnall and Co. Ltd., Bristol, was approached by the Club with a view to purchasing a secondhand airscrew to use on the L-P-W. with Douglas engine. Mr. Parnall very generously offered the Club not only the needed screw but a complete Douglas engine. This is the engine that was used in the Pixie and won the speed prize at Lympne in 1923. A light single-seater will be built to be fitted with the second engine.

A. V. Roe and Co. Ltd. have offered the Lancashire Aero Club a hangar and the use of the aerodrome at their new ground at Woodford, Cheshire, entirely without charges of any kind. The Club has of course accepted A. V. Roe and Co.'s kind offer and hope to move the machines to Woodford as they become ready for flying. There should be at least four machines in flying order by the middle of June, and two others under reconstruction in the workshop.

At the suggestion of Sir William Letts, who has shown great interest in the Club and by whose assistance much of the present success has been achieved, efforts are being made to obtain the use of two rooms in the old Hall Farm on the edge of the aerodrome for use as a Club house.

U.S. Naval Co-operation.

A *Reuter* message dated May 6 states that Mr. Wilbur, United States Secretary of the Navy, has signed orders establishing aviation courses at the Annapolis Naval Academy, and graduates of the Academy will henceforth be trained as pilots and observers.

THE GLOBE TROTTERS.

Rome—Melbourne.

The Marchese di Pinedo, who is attempting to fly from Rome to Melbourne, via Tokio, arrived at Karachi on May 5 at 3.42 p.m., after a direct flight of 360 miles, from Charbar in Persia. He left Karachi for Bombay at 11.0 a.m., on May 8, after the R.A.F. had repaired a damaged float, and alighted in Bombay Harbour at 5.20 p.m., on the same day.

Tokyo—Amsterdam.

Major Zanni, the Argentine aviator, who has been during the Winter an additional Argentine attaché at Tokyo, is now making final preparations for the continuance of his flight round the World. It will be remembered that owing to bad weather last year, he was unable to get farther than that city.

His flight from Amsterdam to Tokyo was made in extraordinary time as the journey of 10,000 miles was made in twenty-two flying days. He hopes to leave Tokyo about May 9 for the second half of his journey and will proceed via Paramushir, Petropavlovsk, the Aleutian Islands, and Alaska to Vancouver, thence to Chicago, New York, Halifax, St. Johns, Ireland, London and Amsterdam, making the journey across the Atlantic in one direct flight.

He will leave Tokyo on the same Fokker-Napier seaplane and engine that carried him from Hanoi to Tokyo.

In addition to his mechanic Beltrame, who has been with him since he left Amsterdam, he will carry with him for his journey across the Pacific Lieut. E. Velo, as navigator. Major Zanni expects to finish the flight with the same Napier engines as he has used in the first part of his journey.

Dutch Successes.

His many friends in this country will be glad to know that Mr. Koolhoven's two-seater fighter, the F.K.31, with the Bristol Jupiter engine, which attracted so much attention at the Paris Aero Show, seems to be meeting with general approval in Europe. As was announced at the time of the Paris Show it is being built in France under licence, by Mr. Louis de Monge and a number of it have been built for the French Government.

It will be remembered that one of the French-built machines recently beat World's Records carrying over 2,000 lbs. of load at which figure it was loaded exactly 10½ lbs. per square foot of surface. In spite of this it got off with a run of 1 seconds.

Finland has now taken up the F.K.31, which type o

CELLULOSE ACETATE

"NOVELLON"
DOPES AND VARNISHES

SUPREME

For tautening, weather-proofing ; also petrol and castor-oil proof.

- - - FIRE RESISTING - - -
- DO NOT DETERIORATE IN STORE -

EXCLUSIVELY USED ON ALL BRITISH AND ALLIED WAR PLANES.

Used on FIRST AEROPLANE ACROSS ATLANTIC, FIRST AEROPLANE TO AUSTRALIA, AND R.34 AIRSHIP TO AMERICA AND BACK.

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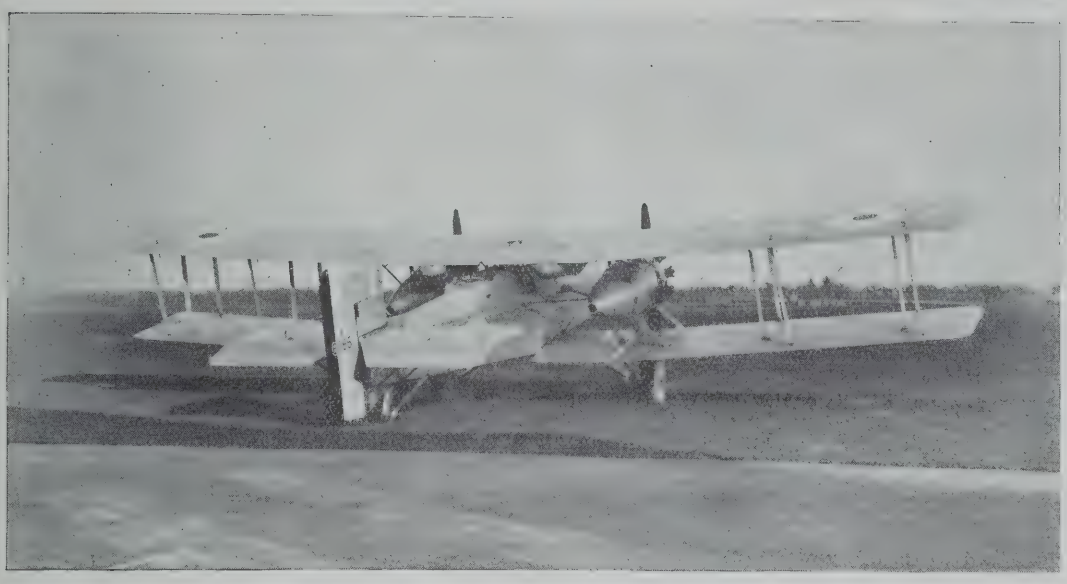
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machine is to be built in Finland in the Government Factory. Poland has also bought several machines of this type. And, as already stated, they have been bought for the Dutch Flying Corps and for the Dutch East Indian Service.

The three-engined passenger-carrying machine of Mr. Koolhoven's design which was shown in the form of a model on the National Vliegtuig Industrie's stand at the Paris Show is nearly completed and should be flying during the present month. In addition Mr. Koolhoven has recently produced a very neat little two-seater training machine with a 120 h.p. Clergêt engine. Photographs of this machine will appear in THE AEROPLANE at an early date.

An Altitude Performance.

The Fokker F.VII, with the Napier Lion engine, which lately was demonstrated at Croydon by Mr. Fokker, showing that when stalling it would not get into a spin but would remain always in hand of the pilot, has again demonstrated its excellent capacities. This aeroplane, flown by Engineer Grasé, on Apr. 30 made a flight to a height of over 20,000 ft., which altitude was reduced to 19,000 ft. after the correction, according to the standard atmosphere of the F.A.I.

On this flight the machine took, besides the pilot and fuel, a useful load of 2,200 lbs. The World's Record for this load is 18,900 ft., so that this record has properly been beaten by the F.VII with about 100 ft. A record now can only be homologated when the existing record has been beaten with 330 ft. at least.

The most remarkable part about this performance is that the flight was executed with a *standard* commercial machine, of which the useful load is 2,200 lbs., which is equal to a number of 11 passengers with their luggage.

This Napier-Fokker F.VII has room for 10 passengers and is of the same type as the aeroplane with which the well-known Amsterdam-Batavia (Dutch East Indies) flight was accomplished.

A Sydney Citizen Air Force.

The Secretary of the Australian Air Board has issued a circular inviting applications from qualified persons living in the vicinity of Sydney desirous of appointment or enlistment in the Citizen Air Force. The proposed annual period of compulsory training is to be 25 days, including 18 days in camp.

A complete list of trade groups and rates of pay is given. Air Force service uniform and equipment will be issued to all ranks.

PERSONAL NOTICES.

DEATHS.

McDONALD.—At Brough, Yorks, on May 5, as the result of a flying accident, Hugh Crichton McDonald, Reserve of Air Force Officers.

Mr. McDonald passed to the Reserve from the active list of the R.A.F. on Sept. 12, 1924. From March, 1921, until September, 1924, he was at the Electrical and Wireless School, R.A.F., Flowerdown. He was doing his Reserve training on a Blackburn Kangaroo machine when the accident occurred.

ROCHE.—On May 3, at the R.A.F. Hospital, Baghdad, of enteric fever, Flt. Lt. John Francis Roche, No. 70 (Bombing) Sqdn., R.A.F.

Flt. Lt. Roche was promoted to that rank on Aug. 1, 1919, while stationed at the Instrument Design Establishment, Biggin Hill. On Apr. 1, 1922, he was posted to the Experimental Section, R.A.E., and in July of the same year to the School of Army Co-operation, R.A.F. In September, 1923, he joined No. 70 (Bombing) Sqdn. in Iraq.

WALLER.—On May 10, at Ambala, as the result of injuries sustained in a flying accident the previous day, Robert Richard Studdert Waller, Flg. Off., No. 31 Sqdn., R.A.F.

Mr. Waller passed out of Cranwell in August, 1922, and was posted to No. 4 Sqdn. In September of the same year he was posted to the C.F.S. and from there to No. 31 (Army Co-operation) Sqdn., Ambala, in September, 1923. He was promoted to the rank of Flg. Off. in February, 1924.

MARRIAGE.

NEWALL—FOSTER.—On Apr. 18, at the Royal Memorial Church of St. George, Cannes, by the Rev. C. Senhouse Ryder, Air Commodore C. L. N. Newall, R.A.F., to Olive Tennyson Foster, only daughter of Mrs. Francis Storer Eaton, of Boston, U.S.A.

FORTHCOMING MARRIAGES.

PILCHER—WILKINS.—The engagement is announced between Thorold F. Pilcher, late R.F.C. and R.A.F., only son of Mr. and Mrs. William Pilcher, of 9, Maidstone Road, New Southgate, and Corisande Vera, younger daughter of Mr. and Mrs. Thomas Wilkins, of Broomfield Avenue, Palmers Green.

PORTER—SURR.—A marriage has been arranged, and will take place at Penton Mewsey on June 3, between Flt. Lt. E. F. Porter, M.B.E., D.C.M., R.A.F., and Bertha, eldest daughter of Flt. Lt. and Mrs. Surr, Tralee, Alexandra Road, Andover.

WILLIAMS—ANSELL.—The engagement is announced of Sq. Ldr. G. G. A. Williams, R.A.F., third son of the late Capt. G. S. Williams, 8th Hussars, and Kathleen Mary, daughter of the late Lieut.-Col. G. K. Ansell, 5th Dragoons, and Mrs. Ansell, of Gorse House, Rugby.

BIRTH.

BEWSHER.—On Apr. 30, at Akayane, Hersham, Surrey, to Catherine, wife of John Bewsher—a daughter.

Receivership.

ARNOTT AND HARRISON LTD.—P. J. Goodchild, of 12, Charterhouse Square, E.C., was appointed Receiver on Apr. 25, 1925, under powers contained in debentures dated Dec. 4, 1922.

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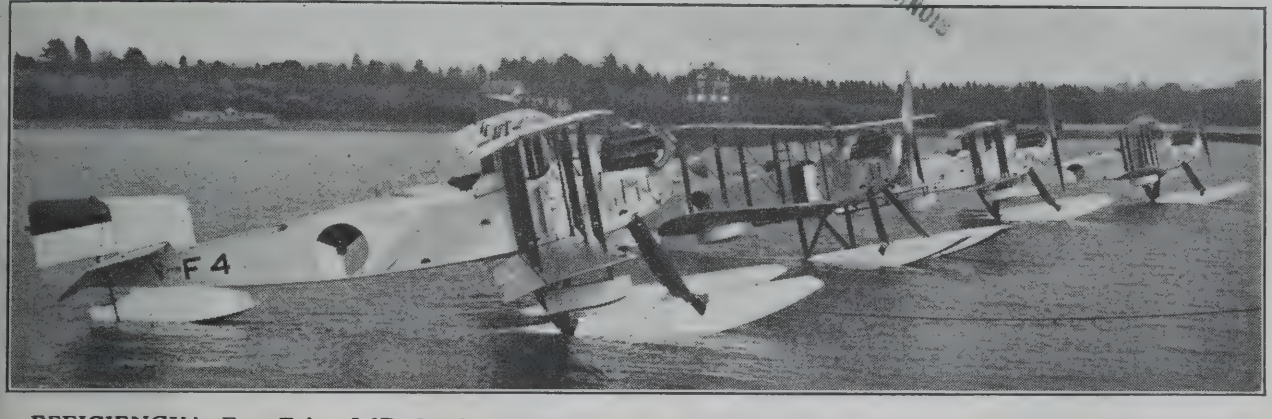
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Edited by C. Gray

Vol. XXVIII. No. 20. SIXPENCE WEEKLY [Registered at the G.P.O. as a Newspaper

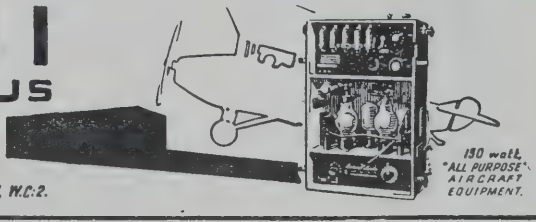
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EFFICIENCY!—Four Fairey IIID. Seaplanes with Napier Engines built for the Dutch Government. They were built ahead of contract time. They were all put through their tests in one day by Mr. Norman MacMillan. Four Dutch pilots practised on them for the next two days. And on the following day all four flew off to Holland, where they arrived without trouble.

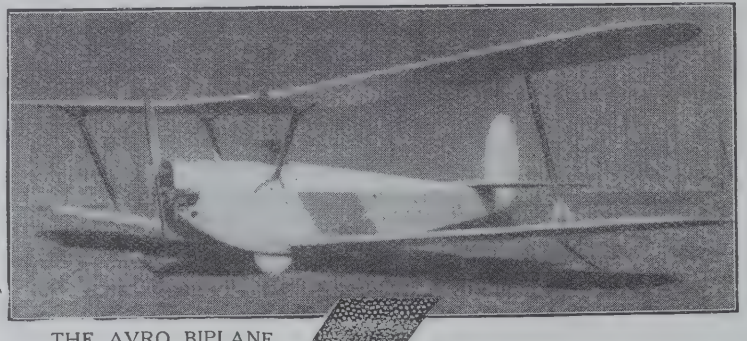
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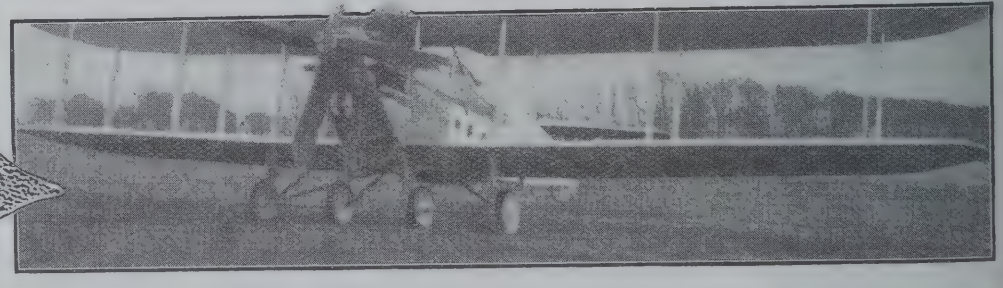
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VOL. XXVIII
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ON GERMANY'S COMMERCIAL AVIATION.

From time to time various English papers burst into a cold perspiration of ink over "The German Air Menace," and produce their sheets moist with rivers of words about the vast German air fleets which they allege are being prepared, apparently with the idea of devastating Europe. The latest case of this particular type of low fever seems to be *The Morning Post* which on May 15 devoted two columns to the subject under such scare-heads as :—

BIG GERMAN AIR FLEETS.

ATTEMPT TO DOMINATE CIVILIAN FLYING IN EUROPE.

NETWORK OF SERVICES.

SERIOUS MENACE TO BRITISH AVIATION.

Thereafter *The Post* states that Germany is making a bold bid to dominate Europe's airways, that her services are to be increased by 75 per cent. and will form a close net-work covering the whole of Central Europe, and that the position is viewed with concern by experts in this country.

The one "expert" whose views are quoted appears to be Sir Samuel Instone who, apparently adopting the rôle of the Fat Boy in *Pickwick* and endeavouring to make our flesh creep, declared that "the developments constituted a menace to British commercial aviation" and that "although the German machines were not actually war machines they would be to the Air Force what the Merchant Service has been in the past to the Navy."

AN OBITER DICTUM.

Furthermore Sir Samuel, giving his views to a representative of *The Morning Post*, said :—

Every foreign country except Great Britain is insisting through its Foreign Office upon certain flying rights over other countries. Our Foreign Office is neglecting the whole matter. We are slowly being hemmed in, and unless our Foreign Office does something about it, we shall be hopelessly out of the running.

There is a great combine being formed under the wing of the Junker companies, which will affect eight or nine countries, including Germany, Hungary, Austria, Esthonia, Latvia, Switzerland, and Roumania. When this is formed it will be a terrible menace to British commercial aviation. It will keep us pent up, and our route to the East will never be developed unless we get flying rights over these countries.

The Morning Post's air expert says that a special mission headed by Colonel Edwards, who is Deputy Director of Air Transport, and Mr. Bertram, who is Assistant Secretary to the Air Ministry, have been to Berlin and have *only* been able to bring back permission to run to Berlin machines such as the Allies permit the Germans to run under the "Nine Rules." *The Post* adds :—"They are not fit for British service."

Furthermore *The Post* says that "The reasons prompting Germany to forbid foreign machines flying over her territory are thought to be two—fear of France and eagerness to push her own aviation to the detriment of other countries."

The attitude of *The Morning Post* and of Sir Samuel Instone reminds one of that delightful French couplet, which one believes comes from a natural history book for children, and says :—

Cet animal est très méchant,
Quand on l'attaque il se defends.

Apparently according to the ideas of *The Morning Post* and Sir Samuel Instone, who seems to be singularly lacking in sympathy for the country of his family's origin, the Germans—whose aeronautical development is hampered to the utmost possible degree by France—ought to allow French and British machines of any size to fly all over Germany without let or hindrance, while themselves submitting without protest to all the restrictions placed upon them, and ought to forget that the German Reich is a Sovereign State. One cannot imagine anything more absurd or blindly illogical than such an attitude of mind.

THE FACTS OF THE CASE.

The facts of the matter briefly are thus :—After the Treaty of Versailles, Germany, quite naturally, was forced to disarm by the Twenty-two Allied Nations which dictated the terms of the Armistice and the subsequent Treaty. All aircraft were considered as being weapons of war and consequently the French who stood in just as deadly fear of Germany after the victory of the Allies as they did before the war, having the dominant voice in the councils of the Allies thanks very largely to Mr. Lloyd George, insisted that German aviation should be crushed out of existence.

Ultimately however the Council of Ambassadors which was appointed to administer, so-to-speak, the terms of the Versailles Treaty, arranged a set of Nine Rules which controlled, and continue to control, the design and construction of German aircraft. The idea of these rules is to allow the Germans a certain amount of flying but only with machines of such limited capabilities as would be harmless in time of war in that although they might be used against a country without any aircraft they would be dominated at once by the aircraft of any nation which owned a respectable air force.

The Nine Rules limit the size of the aeroplanes which may be built in Germany. They limit the load they can carry. They limit the speed at which they can fly. They limit the height to which they can rise with the specified load. They limit the amount of petrol which the engines may use in a given time, and thus limit the power of the engines. Also there are sundry other minor rules all skilfully calculated to cramp the style of German aviation.

Of course the natural result has been that the German designers have devoted themselves to producing the most efficient possible aeroplanes subject to all those limitations. And in consequence Germany has produced in the last few years a number of very interesting and efficient machines.

The effect has been somewhat like that of the horse-power tax on motor-cars in this country. But for the tax on horse-power we should still be lumbering about the roads on cars with enormous and very inefficient engines, whereas to-day British manufacturers have produced small high-speed engines which give astonishing power at high revolutions with very small cylinder bore although according to the official method of calculating power from the bore of the cylinder those same engines are theoretically of very low power.

Also as the German Aircraft Industry has been prevented from spreading itself on the production of quantities of large aeroplanes the German technical people have devoted themselves to research work with that industriousness which is one of the outstanding and most admirable features of the German character. As a result the Germans are steadily bringing Aerodynamics into the region of the exact sciences.

Thus out of evil cometh good. But in spite of their deep religious feeling the Germans are not quite so highly Christianised as to permit to the aircraft of the Twenty-two Allied Nations privileges which are denied to their home-grown aeronautical products.

LOGICAL LAW.

The regulations framed by the Germans to control flying in Germany are strictly and pitilessly logical. The Versailles Treaty agreed that the air over each country is the property of that country and that foreign aircraft may only fly through it with the permission of the country which owns that air. Strictly according to the law any country has a perfect right to shoot down any foreign aircraft which flies over it without permission. But in practice that right is limited to confiscating any foreign aircraft which descends in a country over which it is not authorised to fly.

When the "Nine Rules" were decreed by the Council of Ambassadors the Germans accepted the decree and passed a law which made illegal the construction and flying in Germany of any aircraft exceeding those rules. That is the law of the land, and consequently any foreign aircraft, whether British, French, Italian, Siamese, Chinese, Japanese, Brazilian or Guatemalan, or belonging to any other of the Twenty-two Allied Nations, which exceeds the "Nine Rules" and flies over Germany, is breaking the German law. And that, presumably, is that.

Consequently one cannot see that any of the Twenty-two Allied Nations, or *The Morning Post*, or Sir Samuel Instone, or Sir Eric Geddes, or any of the Directors of Imperial Airways, can justifiably feel the slightest grievance against Germany because the Germans do not choose to make a

special law authorising the flying over Germany of foreign aircraft bigger and more powerful than those which the Germans themselves may build under the "Nine Rules."

Where is the Menace.

Of course it is a pity that, as *The Morning Post* says, the machines which are permitted to fly over Germany "are not fit for British service." But it occurs to one that if they are not fit for British service they cannot be particularly fit for the service of any other nation. And if they are so unfit, then one cannot understand why *The Morning Post* and Sir Samuel Instone should throw themselves into such a panic about this alleged German "attempt to dominate civilian flying in Europe." Nor if the machines are so unfit can one imagine how they can be such a "serious menace to British commercial aviation."

If the machines which Germany is allowed to build under the "Nine Rules" are so frightfully efficient that they are a menace to British commercial aviation then it strikes one that the best thing Sir Samuel Instone can do as a Director of Imperial Airways Ltd. is to induce his colleagues on the Board to order quite a number of machines from British constructors which, while complying with the German law and limited by the "Nine Rules," are so good in other ways that people will fly in them over Germany in preference to flying in Germany's own machines.

One knows that the engineering ability of the British Aircraft Industry can produce such machines. The little demonstration of the Handley Page Slotted Wings which was given at Croydon recently, and the continual demonstration of the effect of Fairey Flaps on various types of machines used by the R.A.F., have surely proved that we can produce aeroplanes which will be safer to fly than those which are being used in Germany and we can certainly build machines with every bit as good a performance.

Therefore one suggests that the Board of Imperial Airways Ltd., instead of whining because the Germans refuse to let us use in Germany aeroplanes such as the Germans are not allowed to use themselves, should go to it and endeavour to beat the Germans at their own game. Surely with £100,000 of perfectly good Government money in the form of subsidy for the year, Sir Eric Geddes and his colleagues can afford to buy one or two experimental machines just to see whether the British Trade cannot do it as well as the German Trade. Such experimental machines need not cost much, for Imperial Airways Ltd. need only buy the aeroplanes and can save at least a couple of thousand pounds on each by fitting them with some of the many spare engines from their own stock.

The Prague Route.

On the other hand, if Imperial Airways Ltd. are so frightfully anxious to fly to Prague as one is led to believe by paragraphs which appear in the papers from time to time—including one in *The Morning Post* saying that Sir Samuel Instone representing Imperial Airways has returned from Prague where he went on a special mission—then let them put their trust in those three-engined machines which are on order from Armstrong-Whitworth Aircraft Ltd. and let them, relying on the infallibility of engines, which seems to be an article of faith with Sir Sefton Brancker, fly non-stop from the French frontier right across Germany to Czechoslovakia.

It is true that such a proceeding would be thoroughly illegal but there is little likelihood that the Germans would exercise their legal right and proceed to shoot down our aircraft. And we need have little fear of that wonderful "Death Ray" which a year or so ago was reported to have brought down a number of French aeroplanes which endeavoured to run between Strassbourg and Prague.

The truth of that story was merely that the engines which the French were using had a habit of giving trouble within a certain definite distance if they were going to give trouble at all, and that in or about that distance there happened to be a fairly decent landing ground. The country before that area and beyond it was very bad for landing. Consequently if a French pilot had trouble with his engine he either staggered across the bad country into the good area or, if he had trouble just after he had passed it, would turn back from the further bad country and stagger back to the good area.

The result was that a number of machines made forced landings within a comparatively short distance of one another. Hence the yarn that a mysterious ray existed in that area which caused the magnetos of the French engines to retire from business.

At the present time one believes that the French are endeavouring to fly to Prague by going via Basle and thence flying along the railway through the Alps to Innsbruck. And those who know the country say that the French will do fairly well if they get through with something like 25 per cent. of their scheduled flights.

The Simple Remedy.

The remedy for the whole trouble is really quite simple. Sir Samuel Instone blames our Foreign Office for the present situation. All that is necessary is for him, or those who think with him, to persuade the Foreign Office to convince the French that they are acting like hysterical jealous women in their whole attitude towards German aviation.

If the French would agree to remedying those absurd "Nine Rules" so that the Germans themselves might be permitted to build aeroplanes of any size they chose, one does not imagine that anybody in England or Italy, which besides France are the countries most concerned in European Aviation, would raise the slightest objection. If once the "Nine Rules" were removed by the Council of Ambassadors the German Government would promptly alter the law prohibiting the building of big machines in Germany and then would permit English and even French machines of any size to ply for hire or reward across Germany.

In the meantime what is actually happening is that German engineers are building big aeroplanes outside Germany. Doctor Rohrbach has built enormous flying boats in Denmark and the Junkers people have built a few very interesting big three-engined monoplanes in Russia and in Switzerland. Probably most of the parts of the big Junkers machines were built in Germany and were merely assembled in Russia and Switzerland, but even so they manage to defeat the law. And thus big German aeroplanes are being built in spite of the "Nine Rules."

Consequently it would be very much better for everybody concerned if France and the rest of the Twenty-two Allied Nations ceased being silly about the size of the German aeroplanes and would let the aeronautical community of civilised Western Europe get along with their jobs and develop commercial aviation and the establishment of air lines in Western Europe. By doing so they would assist very materially in preparing Western Europe for the forthcoming war against the Russian Orientals.

For the Benefit of Civilisation.

The resultant big commercial aeroplanes would not themselves be of any particular use in the war, because as commercial aeroplanes are developed their design will diverge more and more from aircraft of war just as the design of seagoing passenger ships has diverged from the design of warships. But from these big passenger machines we should learn quite a lot about the behaviour of big machines and their engines in continual use.

Also the aerodromes all over Western Europe which would be established for the air lines would be very useful for squadrons of war machines after the outbreak of war. And the air lines themselves would be quite useful during the War for the conveyance of official people and despatches and urgent war material.

Thus it may be seen that by foolishly hampering the development of German aviation the Twenty-two Allied Nations are in fact hindering the preparedness of civilised Western Europe for the war against the Eastern barbarians.

The Benefit of Being British.

Nevertheless we are not really doing too badly. One gathers that the German Government have agreed to the flying of British aeroplanes across Germany, or at any rate to Berlin, so long as those aeroplanes are within the "Nine Rules." Consequently Imperial Airways, Ltd., or anybody else who has the enterprise to do it, can run a British air line straight through to Berlin only subject to precisely the same limitations as are imposed on all those German machines which are supposed to be such a serious menace to British commercial aviation.

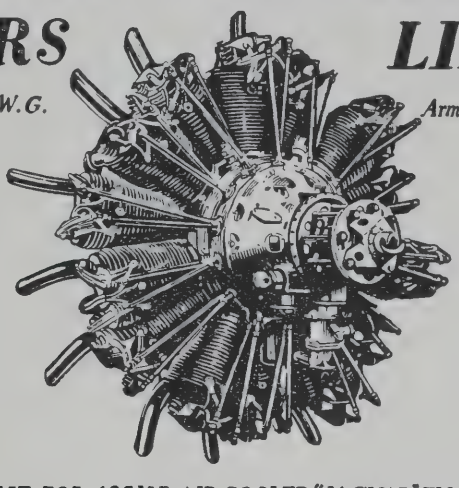
Also apparently the Germans have no objection to British aeroplanes which considerably exceed the "Nine Rules" flying to Cologne. And this despite the fact that no German aeroplane is allowed to fly to Cologne. After all Cologne is German territory, although it is still occupied by Allied troops pending the settlement of the reparations question and the payment of money due from Germany to the Allies.

Under the Versailles Treaty no German aeroplane is allowed to fly over occupied territory. But the Germans would have a perfect right, as that territory is actually German, to prohibit British or any other allied aircraft from flying over it. In spite of that Imperial Airways, Ltd., run regularly to Cologne and reference to recent issues of The Aeroplane shows that Handley Pages and the old Vickers Vimy, both of which types are considerably bigger than is allowed by the "Nine Rules" do go to Cologne. Therefore in this particular matter the Germans appear to be acting very generously where they might quite legally adopt a dog-in-the-manger policy.

The Germans are showing very sound commercial commonsense in marked contrast with the way in which the French, by insisting on the retention of the "Nine Rules," are cutting off their own noses to spite their faces and spoiling their own commercial aviation in Central Europe. As it was the Instone Air Line, before it was absorbed into Imperial Airways, Ltd., which really established the London-Cologne ser-

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vice one feels that Sir Samuel Instone might be a little more generous to the home of his ancestors and be a little less hostile to German aviation than *The Morning Post* would make him appear to be.

GERMANY'S PLACE IN THE SUN.

Personally one has never felt the slightest animosity towards Germany or the Germans. In the very first issue of THE AEROPLANE which appeared after the declaration of war, that dated August 4, 1914, one stated openly that we were on the wrong side in allying ourselves with Russia. And events proved that the statement was absolutely justifiable. Russia let us down at a most critical moment in the War and remained our enemy long after we had ceased fighting Germany.

The War 1914-18 was simply part of the Great Scheme and was both a biological and a political necessity. The Germans as usual proved themselves to be great soldiers and splendid fighting men and patriots. To-day Germany has re-established herself industrially in a way which can only win the respect of every other nation.

Also Germany has re-established herself politically by electing Marshal von Hindenburg as President in a wave of conservatism and social respectability as remarkable as that which elected Mr. Stanley Baldwin to be Prime Minister of England. Any English business man if he tells the truth will say that, with perhaps the exception of the Dutch and the other Nordic peoples, he would rather do business with a German commercial firm than with a firm of any other nationality in Europe. Of course one does not include the Americans in this exception because they are simply part of our own people.

Therefore one suggests to those people and papers who think that they can acquire cheap popularity by protestations of anti-Germanism that they would in fact be pursuing a wiser policy if they would take the far-sighted view that the future of Western Civilisation, and with it the future of the British Empire, very largely depends not merely on a cordial understanding but on an actual solid working alliance between England and Germany.

According to the policy adopted by civilised Europe and by the United States Germany may in a few years' time be either a bulwark of Western Civilisation or the advanced guard of Eastern Barbarism. If the other Western nations back Germany and help the establishment of social respectability in that country then the solid patriotic German will with our assistance hold his Fatherland against the Eastern hordes as solidly as he held it against the Twenty-two Allied Nations. But if we hinder the re-establishment of Germany, as we are attempting to hinder it by hampering the progress of German aviation, then we are helping the cause of revolution and Bolshevism in Germany, and so are helping our own downfall.—C. G. G.

THE ALL-NORDIC AIR LINE.

On May 15th the first machine of Imperial Airways, Ltd., left at 8 a.m. on the first through service to Scandinavia. In previous years the Danish Air Transport Company (Det Danske Luftfartsselskab) have run machines from Copenhagen to Amsterdam somewhat irregularly, and they have not made regular connections with the service from London to Amsterdam. Now the time-tables of the various companies have been so adjusted as to give a direct through connection.

The Imperial Airways machine leaves Croydon at 8 a.m. and reaches Amsterdam about 12. There the Danish machine takes over the passengers for Copenhagen and from Copenhagen there is now an extension to Malmo in Sweden. Thus one may claim that we now have an all-Nordic air line connecting as it does the English, the Dutch, the Germans, the Danes and the Swedes.

Plans are also in hand for a Swedish air line which is intended to start on May 22nd and has been organised by Mr. Florman. This proposes to run direct from Stockholm to Amsterdam, connecting with the morning machine from Croydon.

There is interest in the fact that the first passenger on the Copenhagen-Malmo line was Mr. Britten Austin, the well-known writer, who has specialised on the forthcoming war in the Pacific and is perhaps the only outstanding writer who so far has had the courage to educate the public on the principles of the Race War which one has been preaching for so long in this paper.

Mr. Austin has already published some admirable stories on this subject in *The London Magazine*, whose editor, Mr. David Whitelaw, is to be complimented on having had the courage to publish them seeing that they touch on a phase of international politics which most British editors consider too dangerous to handle. Reference has already appeared in this paper to Mr. Austin's able exposition of the whole Pacific question in a recent issue of *The Empire Review*. He has also written a great deal on the problems of the war in the Pacific in American publications, notably in the Philadelphia *Saturday Evening Post*.

Mr. Austin is at present making a special study of air communication and the possibilities, both political and strategic, of air line development in Europe. Consequently there is singular appropriateness in the fact that he, as one of the leading publicists of the gospel of the Nordic Alliance, should be the first passenger on the first all-Nordic air line. One looks forward with interest to the effect of his experiences on his future writings. And those who believe in the forthcoming struggle between Western Civilisation and Eastern Barbarism will hail him gladly as an ally.

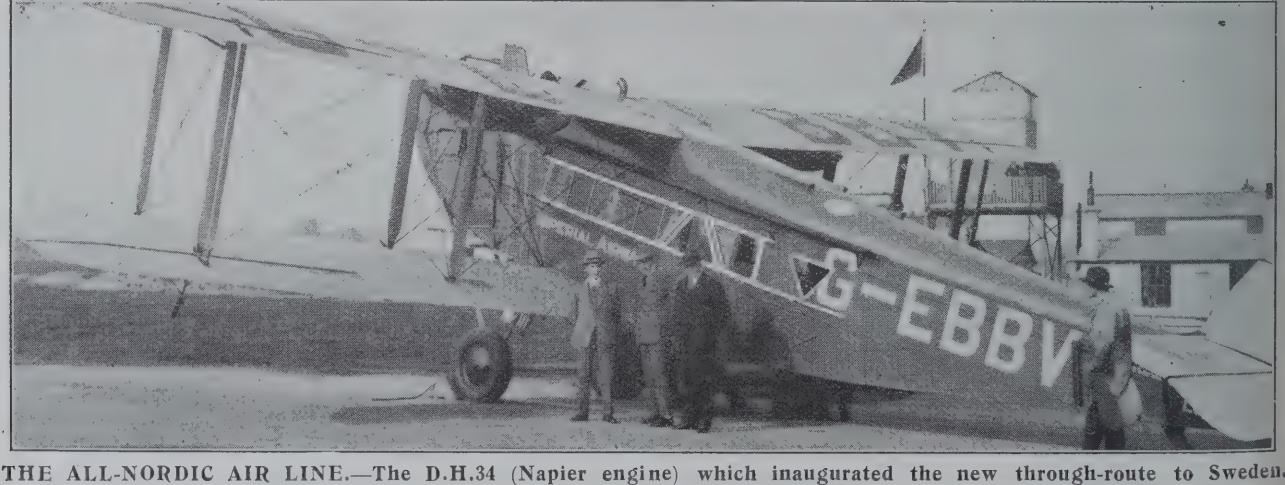
With Mr. Austin went Mr. Linney, who is the editor of "Airways," the house-organ of Imperial Airways, Ltd. Col. Mossberg, the Swedish Military Attaché, was at Croydon to wish good fortune to the new air line.

STAFF WORK AND SUPPLIES.

The attention of those readers who are not of a highly technical turn of mind is particularly directed towards the article in this week's issue of this paper by Capt. W. H. Sayers, the Technical Editor of THE AEROPLANE, entitled *The Production of Aircraft on a War Scale*.

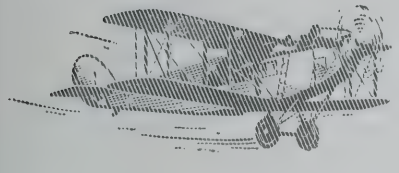
People who are very keenly interested in the personnel of the R.A.F., and even in the practical side of flying, are perhaps rather apt to imagine that because Capt. Sayers is able to handle with facility the most abstruse mathematical problems and the most incomprehensible formulæ all his articles are therefore of so highly technical a nature as to be understanded only of the mathematical elect. This particular article on the production of aircraft is, however, one which can be understood by people of an entirely non-technical turn of mind, for it deals in a most simple and straightforward manner with a problem on the solution of which depends all R.A.F. Staff-Work in the next war.

It is in fact a problem which actually concerns the Operations Staff of the Air Force even more than it concerns the Supply and Research Staff, in that unless the Operations Staff makes up its mind how it is going to conduct its operations the Supply Staff cannot provide the material with which those operations can be conducted. The article might in fact very well be made a subject for debate at the R.A.F. Staff College and one feels sure that it will cause much discussion among the more intelligent and far-sighted members of all R.A.F. messes.—C. G. G.



THE ALL-NORDIC AIR LINE.—The D.H.34 (Napier engine) which inaugurated the new through-route to Sweden. Left to right, Mr. Britten Austin, Mr. Linney and Colonel Mossberg, the Swedish Military Attaché.

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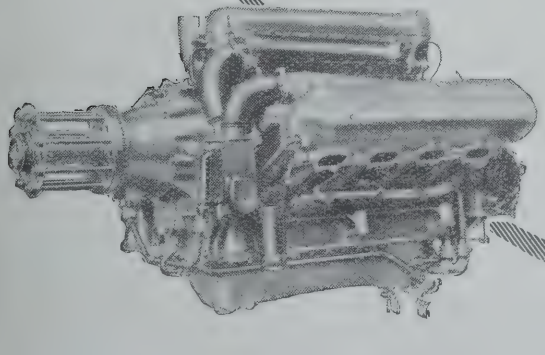
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THE ROYAL AIR FORCE.

The London Gazette.

May 12.

GENERAL DUTIES BRANCH.—The following are granted perm. comns. in the ranks stated (May 13) :—FLT. LTS. :—B. B. Caswell, L. G. de B. Croke, G. V. Howards, D.F.C. FLG. OFFS. :—J. L. Airey, D.F.C., J. B. H. Rogers.

Sq. Ldr. R. H. Portal, D.S.C. (Lt.-Cmdr., R.N.), relinquishes his temp. comn. on ceasing to be lent for duty with R.A.F. (Apr. 27).

The following are granted temp. comns. as Flg. Offs. on attachment for four years' duty with R.A.F. (Apr. 27) :—LT.-CMDR., R.N.—R. H. Portal, D.S.C. LTS., R.N.—H. M. S. Forbes, D.S.C., G. T. Campbell, D. H. Tollemache, K. F. Smith, A. B. B. Foulerton, A. N. R. Keene, C. N. Lentaigne, P. D. Oliver, G. R. F. T. Cooper, R. H. S. Rodger, J. Nicholson, J. F. M. Robertson, P. B. McDonald, N. H. Portal, C. W. Byas, L. G. Richardson, C. R. Townsend, G. C. Dickins, C. L. Keighly-Peach, E. Chafe. SUB-LT., R.N.—P. G. Smith. LTS., R.M.—G. H. Morris, A. G. Warren, R. C. Giles, K. Hunt.

The following Plt. Offs. are promoted to rank of Flg. Off. :—E. C. de V. Lart (Mar. 15); S. M. Thomas (Apr. 15).

Plt. Off. on probation C. F. Caunter is confirmed in rank (Apr. 28).

Wing-Cmdr. J. R. W. Smyth-Pigott, D.S.O., is placed on half-pay, Scale A (May 11).

The S.S. comn. of Plt. Off. on probation L. A. G. D. Kelly is terminated on cessation of duty (May 13).

Flg. Off. L. B. Lewis is placed on retired list on account of ill-health (May 13).

ACCOUNTANT BRANCH.—Plt. Off. on probation L. M. Spicer resigns his perm. comn. (May 6).

MEDICAL BRANCH.—Flt. Lt. (Hon. Sq. Ldr.) W. R. Kemp, B.A., relinquishes his temp. comn. on ceasing to be employed, and is permitted to retain rank of Flt. Lt. (Apr. 10).

RESERVE OF AIR FORCE OFFICERS.—The following are granted comns. on probation in the General Duties Branch in the ranks stated (May 5) :—CLASS A.—FLG. OFFS.—H. A. Buss, O.B.E., D.S.C., S. A. Packman (Maj., R.A.R.O.). PLT. OFFS.—S. Barker, M. H. Edmunds, F. James, G. P. Macdonald, A. C. Robertson, G. B. Shillaker, J. D. Sinclair. CLASS B.—FLG. OFF.—H. W. G. Trotman. PLT. OFF.—W. A. R. Speight.

The following Plt. Offs. are promoted to the rank of Flg. Off. :—L. D. Hamblin (Mar. 18); A. E. Ansell (Apr. 23); E. P. Smith (Apr. 30); S. G. Shand (May 6); H. H. Perry (May 6). The following Plt. Offs. are confirmed in rank :—C. C. Thurrell (Apr. 21); S. W. Lummis (May 11). Flg. Off. G. M. Stephenson is transferred from Class A to Class C (Mar. 22); Flg. Off. S. Hampton is transferred from Class B to Class C (May 12). Plt. Off. J. E. G. Robinson resigns his comn. (Apr. 16).

Appointments.

Week ending May 18.

GENERAL DUTIES BRANCH.—Air Commodore C. L. N. Newall, C.M.G., C.B.E., A.M., to H.Q., Special Reserve and Auxiliary Air Force, for duty as Air Officer Commanding, 14/5.

Wing Commander H. R. Busteed, O.B.E., A.F.C., to H.M.S *Furious* for duty as Senior Air Force Officer, 8/5.

Squadron Leaders R. D. Oxland, to No. 502 Sqdn., Aldergrove, 30/5. C. H. Hayward, to H.Q., Special Reserve and Auxiliary Air Force, 14/5.

Flight Lieutenants E. F. Turner, A.F.C., and C. F. Toogood, to No. 502 Sqdn., Aldergrove, 30/5. H. A. Smith, M.C., to No. 19 Sqdn., Duxford, 18/5. L. H. Cockey, to No. 3 Group H.Q., Spittlegate, 18/5. P. F. Fullard, D.S.O., M.C., A.F.C., to Air Ministry, 1/6. J. P. Coleman, A.F.C., to H.Q., Special Reserve and Auxiliary Air Force, 14/5. R. E. Nicoll and R. J. Rodwell, to R.A.F. Depot on transfer to Home Estab., 29/4. B. E. Baker, D.S.O., M.C., A.F.C., to No. 4 F.T.S., Egypt, 15/4. P. D. Robertson, A.M., to Inland Water Transport, Iraq, 8/5. J. R. Cassidy, to No. 208 Sqdn., Egypt, 1/4. C. W. Attwood, to No. 216 Sqdn., Egypt, 1/4.

Flying Officers F. G. Gibbons, D.F.C., to No. 208 Sqdn., Egypt, 15/4. S. J. Smetham, to No. 2 Wing H.Q., India, 8/5. F. F. Inglis, to Aircraft Depot, Egypt, 15/4. W. J. Buchanan, D.F.C., and A. H. Love, to R.A.F. Depot on transfer to Home Estab., 28/4. H. B. Holdway, to No. 20 Sqdn., India, 14/4. S. C. Black, M.M., to No. 39 Sqdn., Spittlegate, 18/5. R. N. Waite, to No. 1 F.T.S., Netheraovn, instead of to R.A.F. Cadet College. H. J. Storey, to remain at R.A.F. Depot. K. R Thomas, to Aircraft Park, India, 22/4. S. C. Black, M.M., to remain at Electrical and Wireless School, Flowerdown. G. Lansdowne, D.F.C., to Armament and Gunnery School, Eastchurch, 18/5. B. C. Duke, H. W. Pierce, V. J. Hatton, H. C. Evans, F. F. W. Hall and E. C. A. Wing, to No. 502 Sqdn., Aldergrove, 30/5.

Pilot Officers F. W. C. G. Tussaud and W. C. Ward, to No. 502 Sqdn., Aldergrove, 30/5. C. W. Martin, to No. 2 F.T.S., Digby, on transfer to Home Estab., 14/5.

MEDICAL BRANCH.—Wing Commanders E. C. Clements, O.B.E., and D. Ranken, M.S., B.S., F.R.C.S., to Specialists' Medical Establishments for Specialists' Duties with Central Medical Board, 6/5. Squadron Leaders T. J. Kelly, M.C., M.B., B.A., to R.A.F. British Hospital, Iraq, 24/4. J. M. A. Costello, M.C., M.D., M.Sc., to Basrah Combined Hospital, Iraq, 24/4. Flight Lieutenant V. R. Smith, to Stores Depot, Egypt, 1/5. Flying Officers C. J. Macquillan, M.B., B.A., to Station Commandant, Iraq, 25/4. R. F. Dickson, to Research Laboratory and M.O.S. of I., Hampstead, on appointment to a S.S.C. for short course, 12/5.

STORES BRANCH.—Flight Lieutenant T. J. Organ, to H.Q., Special Reserve and Auxiliary Air Force, 14/5. Flying Officer H. J. Bamber, to No. 502 Sqdn., Aldergrove, 30/5.

ACCOUNTANT BRANCH.—Flight Lieutenant W. H. Hoile, M.B.E., to H.Q., Special Reserve and Auxiliary Air Force, 18/5. Flying Officers F. M. Gingold, M.B.E., to R.A.F. Depot on transfer to Home Estab., 17/4. R. T. Carter, to No. 502 Sqdn., Aldergrove, 30/5.

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident near Upavon, Marlborough, Wiltshire, to a D.H.9.A. of No. 1 Flying Training School, Netheravon, Wiltshire, at 3.30 p.m. on May 15, David Brown Morgan, Lieut. R.N., Flg. Off. R.A.F., the pilot of the aircraft, was killed.

R.33 Awards.

The Air Ministry announces :—The King has been graciously pleased to approve of the following awards in recognition of conspicuous devotion to duty in circumstances of exceptional difficulty and danger on board H.M. Airship R.33 on the occasion of the breaking away of the airship from the mooring mast at Pulham on Apr. 16, 1925 :—

Awarded a Bar to the Air Force Cross: Flt. Lt. Ralph Sleigh Booth, A.F.C., R.A.F., First Officer of the Airship, who was the only officer on board.

Awarded a Bar to the Air Force Medal: Flt. Sjt. George William Hunt, A.F.M., R.A.F., Chief Coxswain of the Airship.

Awarded the Air Force Medal: Mr. George Ernest Long, Second Coxswain of the Airship.

Awarded the Meritorious Service Medal of the Order of the British Empire (Civil) : Mr. William Rose Gent, Senior Engineer on board. Mr. Leslie Anderson Moncrieff, Rigger, acting Coxswain. Mr. Charles Bernard Olliver, Rigger, acting Coxswain. Mr. Spencer Thomas Keeley, Wireless Operator.

A suitably inscribed watch will be presented by the Air Council to each of the remaining members of the crew, viz :—Mr. A. V. Bell, Mr. R. W. Dick, Mr. W. H. King, Mr. Z. Little, Mr. N. Mann, Mr. D. W. Mayes, Mr. J. N. Potter, Mr. J. G. Rarp, Mr. H. L. Rowe, Mr. J. E. Scott, Mr. S. E. Scott, Mr. J. Walkenshaw, Mr. G. Watts.

The R.A.F. Display.

The R.A.F. Display, formerly known as the Pageant, will take place at Hendon Aerodrome on June 27 at 3 p.m.

The gates will be open from 11.30 a.m., preliminary flying will start at 1.30 p.m., and the R.A.F. Bands will play from 1 p.m. The prices of the various enclosures will be the same as in previous years.

The programme includes formation flying by 26 machines at once, a fight between a bomber and two single-seaters and the destruction of an enemy cruiser by a formation of bombing aircraft.

Short Service Commissions in the R.A.F.

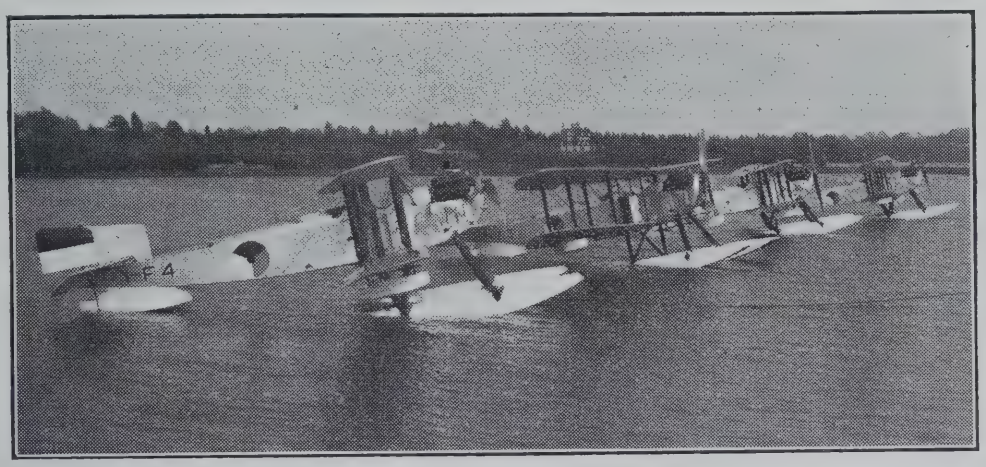
The Air Ministry announces that the R.A.F. is prepared to accept during the next three months, approximately 100 officers for flying duties, under the Short-service Commission



MAKING CONTACT.—A reproduction of the striking coloured poster by Mr. A. B. Cree which is being used to advertise the R.A.F. Display. One hopes that it will make contact with many thousands of the British Public.

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FAIREY SERIES III. SEAPLANES FOR SERVICE IN DUTCH EAST INDIES.

The above photograph depicts a batch of Fairey Series III. Seaplanes which have just been supplied to the Dutch Government. It was in a machine similar to these that the Round Australia flight was made, a performance that has been awarded the Britannia Trophy for 1924. This and many other notable achievements have demonstrated the remarkable suitability of these aircraft for work in tropical climates.

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Scheme, and applications are accordingly invited from suitable candidates. Part of these are required as a result of the authorised expansion of the Air Force for home defence, the remainder being needed to replace other short service officers who automatically pass to the Reserve of Air Force Officers on termination of their period of service on the Active List.

Candidates, who should be of thoroughly good education and physique but who need not have had any previous flying experience, must not be less than 18 and not more than 25 years of age at the time of entry.

Short-service Commissions are granted for five years' service on the Active List, followed by a period of four years' service on the Reserve.

For all purposes of pay, allowances, and promotion, short service officers receive equal treatment with officers holding permanent commissions. The present rates of pay and allowances for unmarried pilot officers amount to £1 4s. 11d. a day or about £450 per annum. In addition, short-service officers receive on transfer to the Reserve on the completion of their period of five years' active list service, a gratuity of £375.

Pilot officers will be posted to one of the R.A.F. flying training schools where they will undergo a course of training in aviation and in aeronautical and technical subjects for a period of a year. At the end of this period they will be posted to Air Force squadrons for duty.

A strictly limited number of officers serving on short service commissions may be selected for transfer to the permanent list.

Arrangements have also been made for all officers, who desire it, to receive special tuition from the R.A.F. education officers, who have been recently appointed, to equip themselves for civil life against the time when their period of service terminates. These educational facilities are being gradually extended.

Application forms and copies of the detailed regulations can be obtained by applying in writing to the Secretary, Air Ministry, Adastral House, Kingsway, London, W.C.2.

The Independent Force Dinner.

The Seventh Annual Re-Union Dinner of the Independent Force, R.A.F., including all officers of Army Troops and other attached Units, will be held at the R.A.F. Club, 28, Piccadilly, W.1, on June 23, at 7.45 for 8 p.m.

The Chair will be taken by Air Chief-Marshal Sir H. M. Trenchard, Bart., G.C.B., D.S.O.

An orchestra from the R.A.F. Central Band will be in attendance, and the Committee of the R.A.F. Club have kindly consented to make honorary members for the occasion all those members who do not belong to the R.A.F. Club.

Tickets (price 10s. excluding wines), should be applied for as soon as possible from the Hon. Secretary, S.F. (R.A.F.) Dinner Club, Room 546, Adastral House, Kingsway.

The Royal Tournament.

A Drill Display by the R.A.F. is part of the programme of the Royal Tournament, which will be held at Olympia from May 28 to June 13 in aid of Service charities. The set piece of the programme is to be a Gunners' show, and is called "The Story of the Guns throughout the Ages," including anti-aircraft guns. The Schools of Physical Training of all three Services will give a combined exhibition of the useful and abused P.T. There will also be the usual horse-jumping competitions and the Skill-at-Arms displays.

The Helicopter Competition

The Air Ministry announces: None of the machines entered for the Helicopter Competition, 1924-25, was presented for test during the prescribed period.

All of the prizes originally offered are consequently available to be competed for in the further competition announced in March last, the entry list for which is now closed.

R.A.F. Sports.

R.A.F. SPORTS AT ABOUKIR.

The R.A.F. Units at Aboukir (Egypt) held a Sports Meeting on Apr. 9. An exhibition of stunt flying by Flt. Lts. Noakes and Banting was part of the programme and the voluntary Band of the R.A.F. Depot played during the afternoon.

Group Capt. F. W. Bowhill, C.M.G., D.S.O., was referee of the sports and Wing Cmdr. Steele-Perkins was general organiser.

The Stores Depot "A" won the Unit Challenge Cup and the Cock o' the Walk Cup was won by the Aircraft Depot "Woodpeckers." Cpl. Rowell, of the Stores Depot, won the Zone Challenge Cup for the highest individual points at the meeting.

Mrs. Steel-Perkins presented the prizes.

The winners of the various events were as follows:—100 yards: Cavanagh (A.D.). 100 yards open: Lt. Ditmass (E. Yorks. Regt.). 100 yards officers: Flg. Off. Mobsby (A.D.). 220 yards: Phillips (S.D.). 440 yards: Newing (A.D.). 440 yards open: Lt. Ditmass (E. Yorks. Regt.). Half-mile: Rowell (S.D. "A"). One mile: Rowell (S.D.). One mile open: L-AC. Harrison (E.R.D.). Three miles: Rowell (S.D.).

High jump: Knowles (A.D.). Long jump: Brooker (S.D. "B"). 120 yards hurdles: Jones (A.D.).

Relay race: Stores Depot "A." Relay race, Officers *v.* Sergeants (half-mile): Won by Officers by 50 yards. Team race (one and a-half miles): Stores Depot "A." First man home, Rowell, 9 min. 7 sec. Veterans' race. S.M. Bolt.

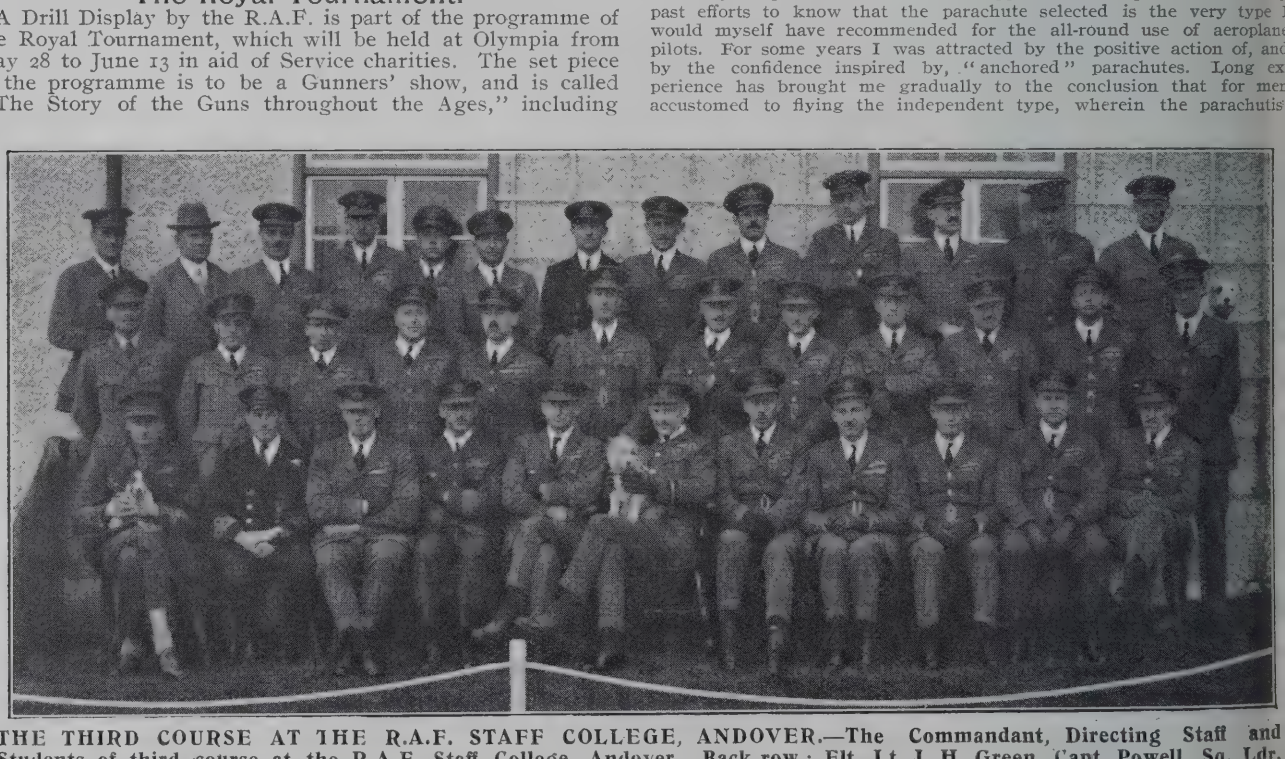
Putting-the-weight: Brooks. Throwing the cricket ball: Bridger (S.D.), 106 yards. Throwing the hammer: Garvock (A.D.), 65 ft.

Parachutes.

The following letter appeared in *The Times* on May 14:—

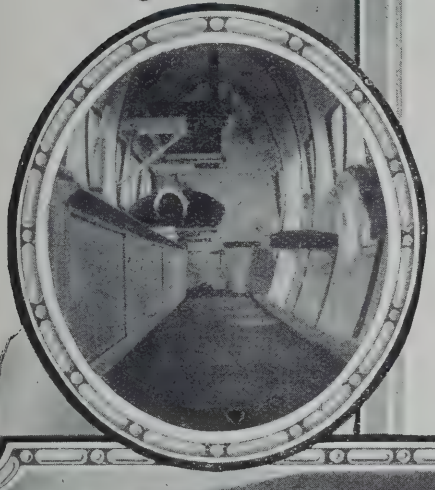
Sir,—Having striven for nearly ten years to convince the Air Ministry that parachutes were practical on aeroplanes, it was with feelings of the warmest thankfulness that I read Sir Samuel Hoare's recent announcement in the House of Commons that he had decided to order the Irvine free type of parachute for Service use. So conviction has come. Whoever has convinced the Ministry is heartily to be congratulated.

It may surprise those few who happen to be acquainted with my past efforts to know that the parachute selected is the very type I would myself have recommended for the all-round use of aeroplane pilots. For some years I was attracted by the positive action of, and by the confidence inspired by, "anchored" parachutes. Long experience has brought me gradually to the conclusion that for men accustomed to flying the independent type, wherein the parachutis



THE THIRD COURSE AT THE R.A.F. STAFF COLLEGE, ANDOVER.—The Commandant, Directing Staff and Students of third course at the R.A.F. Staff College, Andover. Back row: Flt. Lt. J. H. Green, Capt. Powell, Sq. Ldr. A. C. Maund, C.B.E., D.S.O., Wing Cdr. T. W. Mulcahy-Morgan, M.C., Sq. Ldr. C. J. Mackay, M.C., D.F.C., Flt. Lt. L. N. Hollinghurst, D.F.C., Lt. Cdr. H. J. Johnstone, R.N., Flt. Lt. P. F. Fullard, D.S.O., M.C., A.F.C., Flt. Lt. C. J. S. Dearlove, Sq. Ldr. E. M. Pollard, Wing Cdr. J. T. Babington, D.S.O., Capt. H. S. Ellis, M.C., Wing Cdr. B. E. Sutton, D.S.O., O.B.E., M.C. Middle row: Major H. L. Ismay, D.S.O., Wing Cdr. C. H. K. Edmonds, D.S.O. O.B.E., Flt. Lt. T. W. Elmhirst, A.F.C., Sq. Ldr. R. Collishaw, D.S.O., O.B.E., D.S.C., D.F.C., Sq. Ldr. A. G. R. Garrod, M.C. D.F.C., Flt. Lt. A. G. Weir, Sq. Ldr. N. H. Bottomley, A.F.C., Sq. Ldr. F. H. M. Maynard, A.F.C., Sq. Ldr. G. C. Pirie, M.C., D.F.C. Sq. Ldr. J. C. Slessor, M.C., Wing Cdr. A. B. Gaskell, D.S.C., Sq. Ldr. T. E. B. Howe, A.F.C. Front row: Capt. K. F. B. Tower, M.C., Lt. Cdr. W. K. D. Dowding, D.S.C., R.N., Sq. Ldr. D. G. Donald, D.F.C., A.F.C., Sq. Ldr. R. S. Brown, A.F.C. (R.A.A.F.), Grp. Capt. W. R. Freeman, D.S.O., M.C., Air Vice-Marshal H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C., Wing Cdr. J. L. Gordon, D.F.C. (R.C.A.F.), Sq. Ldr. L. G. S. Payne, M.C., D.F.C. Flt. Lt. J. P. Coleman, A.F.C., Sq. Ldr. C. H. Keith, Flt. Lt. J. W.

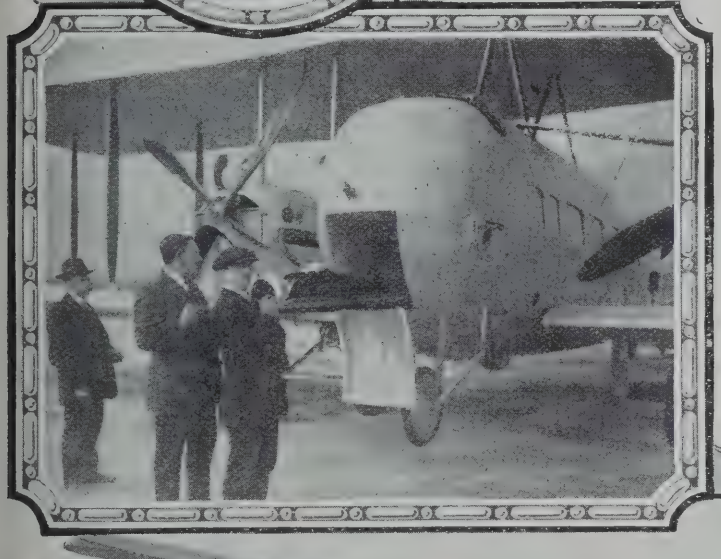
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pulls a string after jumping, is likely to save more lives in the long run owing to its freedom from any possibility of fouling the machine, provided that the rip-cord of the knapsack in which it is contained is not pulled too soon. Premature operation under the drastic ordeal of hurling oneself into mid-air must occur occasionally, even with skilled aviators, and either that or physical inability to operate the hand-line will occur more frequently with passengers unaccustomed to air work, but as the rip-cord can be made to function automatically by attaching it to the aeroplane by means of a pre-determined length of line, provided that the parachutist does not foul the latter on jumping, the danger of nervous inability to release the parachute may be largely discounted. Automatic operation of this kind was very successfully employed on nearly all the German aeroplanes towards the close of the war.

More than one case of premature operation is known to have occurred, but it is perfectly simple to obviate this also by arranging the same cord in such a way that the pulling of the hand-rip-cord cannot become effective until after the automatic attached line has exerted its pull. This ensures that the parachute cannot be released until the parachutist is radially far enough from the machine to prevent its fouling.

Parachutes will not save every life, of course, but they will give us a sporting chance which we never had before. During the war a high percentage of German aviators were saved by their parachutes. We sacrificed about 8,000 lives for want of parachutes. At least 4,000 of those aviators could have been saved.

In *The Times* of Aug. 27 last your Aeronautical Correspondent says that a harness is required in which the man does not suffer too great a shock on the opening of the parachute. Well, strange to say, the elasticity of the air is such that the biggest fall imposes a negligible shock when the parachute opens. At Roehampton Naval Balloon School, under scientifically timed conditions, I fell 870 ft. out of a drop of 11,000 ft. before the parachute opened. The only people aware of anything untoward were the ground party. There was no shock as such. The harness must be strong enough to stand the great strain of retarding a man's momentum under these severe conditions. Although I have succeeded in making a safe landing from less than 150 ft., obviously the greater the height from which one jumps the safer it is, because there is more time to think what one is doing and, especially, because there is more time for the parachute to open. As in all things aerial, there is safety in height.—(Signed) T. Orde Lees (Lt.-Col.), late Director of Parachute Section, R.A.F.

Peers' School, Tokyo, Apr. 18.

[One is glad to see that the one Englishman who has done more than any other to demonstrate the safety of parachutes should, after using the "static" type for so long, give such convincing support to the "free" type.—C. G. G.]

Aircraft and Transport.

On May 13th, the Institute of Transport held its 6th annual dinner, with Sir Lynden Macassey, the President of the Institute, in the Chair. The speakers included Sir William Joynson-Hicks, the Home Secretary; Colonel Sir Wilfred Ashley, the Minister of Transport; the Lord Carson of Duncairn, another ex-Cabinet Minister; Sir William Inskip, the Solicitor-General, and Sir Joseph Nall, M.P., who looks very like being a Cabinet Minister before long.

The speeches were mostly concerned with road traffic problems and especially with the congestion of London traffic. Sir William Joynson-Hicks, representing the Police, and Col. Ashley, representing the Roads, instead of tendering one another the usual after-dinner bouquets of speech, belaboured one another with oratorical bludgeons, the blows of which must have hurt fairly shrewdly despite their humorous intent.

The only references to aviation came from Colonel Ashley and Lord Carson, but though brief they are noteworthy.

Colonel Ashley referred to Aviation as the Benjamin of Transport and said that it must become of importance. He said we had reached the limit of speed on railways, increased speed at sea was out of the question because of the cost, the speed of road transport might increase but not greatly. Therefore if we wished for quicker transport we must look to aviation and "movements through the air" for progress.

Lord Carson, in a very humorous speech, said that he saw in this brief reference to Aviation the forthcoming aggrandisement of the Ministry of Transport. He himself had been a pupil of Mr. Lloyd George and knew how it was done. He said that Colonel Ashley evidently had in view the control of commercial aviation, which would mean a Commercial Air Force useful either for war or peace. And as the R.A.F. was the eyes of the Navy he saw that Colonel Ashley had his eye on the control of the Navy also.

Australian Civil Aviation.

The Sydney correspondent of *The Morning Post*, in a communication dated May 15, states:—

The Manager of the Adelaide-Sydney air service announces the cessation of the present service under the scheme to provide air connection from Sydney, Melbourne, and Adelaide with Broken Hill. The present Adelaide-Sydney route will terminate at Cootamundra, where railway connection with Sydney renders further flight less profitable. The company intends to start two new routes branching from the Adelaide-Cootamundra course, one from Melbourne to Hay, and the other from Mildura to Broken Hill.

The Adelaide-Sydney service has been operating for twelve months, and approximately 100,000 miles have been flown without injury to passengers or crew.

Air Affairs in Parliament.

MARSHAL OF THE ROYAL AIR FORCE.

In the House of Commons on May 12, in reply to a question by Mr. G. Thorne, the Secretary of State for Air said that the decision to effect the change in the highest Air Force rank was taken in view of the general consensus of opinion in the Service that the designation "Marshal of the Air" was somewhat indefinite in character, and that a title more explicitly related to the R.A.F. was to be preferred to it.

THE R.33.

In the House of Commons on May 14, in reply to a question by Sir H. Brittain, the Secretary of State for Air said that the repairs to the R.33 would, he hoped, be completed and the airship ready to take the air by the end of July or early in August.

FLYING DUTIES.

In the House of Commons on May 15, in reply to a question by Capt. F. Guest, the Secretary of State for Air said that the total number of officers in the R.A.F. was 3,314, of whom 2,607 belonged to the General Duties Branch, and unless excused on grounds of age, medical unfitness or other special reasons, were required to fly regularly.

FATAL ACCIDENTS.

In the House of Commons on May 15, in reply to a question by Capt. F. Guest, the Secretary of State for Air supplied the following figures concerning fatal accidents in the R.A.F. in the British Isles, Iraq and India respectively: 1922—20, 7, 4; 1923—20, 2, 4; 1924—29, 8, 7; and 1925 to date—5, 3, 3. In none of these cases were the occupants of the aircraft equipped with parachutes.

[In the majority of cases parachutes would have been of no use, whereas slotted wings and slow-flying flaps would have prevented most of the accidents.—C. G. G.]

Air War in Morocco.

The French offensive against the Riffi who invaded the French zone in Morocco started on May 13. The French forces are under the command of General de Chambrun and include a strong air section. The main attacking force, under General Colombat, was supported by a large number of aeroplanes which harassed the retreating Riffi as they were driven down the valleys.

According to the Madrid correspondent of *The Morning Post* the Riffi have captured several French aeroplanes which were forced to land within the enemy zone. This seems to be an answer to the French rumour that the Riffi were using an aeroplane captured from the Spaniards.

Incidentally there is interest in noting that the Riffi are not Moors, Arabs, or Africans of any sort, but are mostly brown or fair-haired, with blue or light eyes, and are of distinctly Nordic type. They are apparently the remains of the Vandal conquerers of Africa, who traversed Gaul and Spain from the North, being in fact the advanced tribes of the Goths of whom the Visigoths became the aristocracy of Spain. The point is of interest because of the effect of race-origin on military moral and of the effect of the Nordic intellect on strategy and tactics.

The battle for the possession of the Bibane Hills was materially aided by the aeroplanes operating with the French Army. Some of the machines are said, by *The Daily Telegraph*, to be the large bombers designed for us against Germany just before the Armistice. Colonel Armengaud is in command of the air forces.

The convoys of the Riffi gathered in the Bibane valleys were completely broken up by bombing and machine-gun fire from French aircraft. In addition to direct action the besieged garrison of Aoulay was supplied with grenades, detonators and provisions. Aeroplane ambulances conveyed wounded men from the front line. One of the three Riffi guns was destroyed by bombs from the air.

In the House of Commons on May 18 Capt. F. Guest asked the Prime Minister whether he had any official information showing that the military equipment of the Riffian Army had been provided from British sources and that British pilots were flying the Riffian aeroplanes. The Prime Minister said that he had no information on the subject.

In Spain the opinion is that the equipment and ammunition of the Riffs is being supplied from France. And in France the opinion is that it is being supplied from Spain. In Africa the opinion is that it comes from America and in America they think it comes from Bolshevik Russia via Japan, who in their turn think Imperially—of the British Empire. In any case "nines" and things must start somewhere.

Aviation in British Columbia.

The Air Force Club of British Columbia recently completed its first year of existence. Major Duncan Bell Irving has again been elected President and Major D. R. MacLaren Vice-President. The Secretary is again Capt. Leonard Miller, who will perhaps be best remembered on this side of the Atlantic as the author of that very entertaining book, *The History of 55 Squadron R.F.C.* The Air Force Club of B.C. has an excellent board of directors and is concerning itself actively with the development of aviation in British Columbia.

The directors and members of the Club are now both busy pushing a scheme for the air defence of British Columbia. Members of the House of Commons have shown interest in the Club's proposals, though of course they are not commit-

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An American Press Opinion.



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TWO SEATER LIGHT AEROPLANE
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"Our English cousins are demonstrating to a skeptical world that a really fine light aeroplane can fulfil the optimistic promises made for it. The DE HAVILLAND 'MOTH,' for example, proves to be capable of a reasonable speed range, is ruggedly built and the fortunate selection of a trustworthy low-powered engine places it in the practical class of 'light' aeroplanes."

"The machine's ability to rise from and alight upon rather unfavorable terrain with relatively little difficulty, makes it an ideal one-man ship for cross country travel."

"Aero Digest," New York, May, 1925.

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ting themselves to any extent in view of there being a general election in Canada during the coming Autumn.

The Honourable S. F. Tolmie, Member for Victoria, Vancouver Island, has laid stress on the need for the defence of the coast of British Columbia and has pointed out that if the United States and Japan ever go to war Canada must be in a position to maintain her neutrality. In the present state of Canadian defences it would be quite possible for either Power to establish a submarine base or bases on the coasts of Vancouver Island and so involve Canada in the war. And in the case of the Japanese they might make the island a base for air force aerodromes for bombing American coastal cities such as Seattle, and Canada could do practically nothing to prevent Japan from using Vancouver Island in this way. But, as Mr. Tolmie has pointed out, if Canada had an effective air reserve there would at least be the possibility of making Vancouver Island very unpleasant for any Power which violated its neutrality.

There has been some talk in the Canadian Parliament of strengthening the Canadian Navy, which is at present about capable of making some sort of show against one Japanese cruiser of low rating, and an effort is being made to convince the Canadian Government that with aircraft you get more for your money and can do more with it.

So far from the ideas of the Air Force Club of British Columbia being militaristic, in the sense of being immediately hostile to Japan, its schemes lie along the line of home defence and the maintenance of neutrality. The Club does not suggest acquiring innumerable machines which might be obsolete to start with and would certainly be so before they would be needed in war, for the Club feels that by modern mass-production methods machines of almost up-to-date type can be produced most rapidly in the event of war.

The Club's idea rather is to produce pilots, something on the lines of the light aeroplane clubs about which much has been written in England. Therefore the Club's suggestion is that pilots should be trained and maintained in a state of efficiency ready for any emergency.

The Club does not want the formality of a regular militia organisation together with the expense of uniforms, allowances and so forth, because they realise that the finances of Canada cannot stand it. But as a Club interested in flying they want to fly and so offer the Government a supply of pilots in return for giving the Club without expense opportunities of flying and of training pilots.

The scheme is undoubtedly sound and one hopes that the Club will meet with the Government support which it so richly deserves.

Air and Water Speeds.

For the first time in history Londoners will soon have an opportunity of seeing really high-speed motor boats at work on the Thames. On Saturday, June 6, the eliminating trials will be held for the selection of a team of three 1½ litre (1,500 c.c. engined) class boats to represent Great Britain in the race for the Duke of York's International Gold Trophy. The course is to all intents and purposes that over which the Oxford and Cambridge Boat Race is held, namely between Putney and Kew on the Thames, only instead of the competitors passing up the course once, as in the Oxford and Cambridge Boat Race, the course will cover about 30 sea miles, so that the competitors will pass any given point about four times.

The Motor Boat Clubs' Joint Racing Committee are to be congratulated on having obtained permission from the Port of London Authority to hold such a race on the Thames. As the speed of these racing boats is about 40 miles an hour one might suppose that, as in the case of Mr. Kipling's famous gunpowder barge, "the wash and consequent erosion is marked." But as they are all hydroplanes of the most advanced design there is practically no wash at all, though when turning in something like their own length, as these boats do, round the mark-boats the resultant wave does look exciting.

There is interest in noting that some of our old friends of the Aircraft Industry are concerned in the race by way of their engines. One boat which will be well worth watching is *2.L.O.*, which has in it the latest product of the Green Engine Company, Ltd. Mr. Freddy May is naturally reticent about what the engine will do, but he says that the little 1500 c.c. job, which has a bore of 70 m.m. and a stroke of 97 m.m., turns round remarkably fast and is particularly beautifully balanced. In fact, it runs on the bench at several thousand r.p.m. without any holding-down bolts.

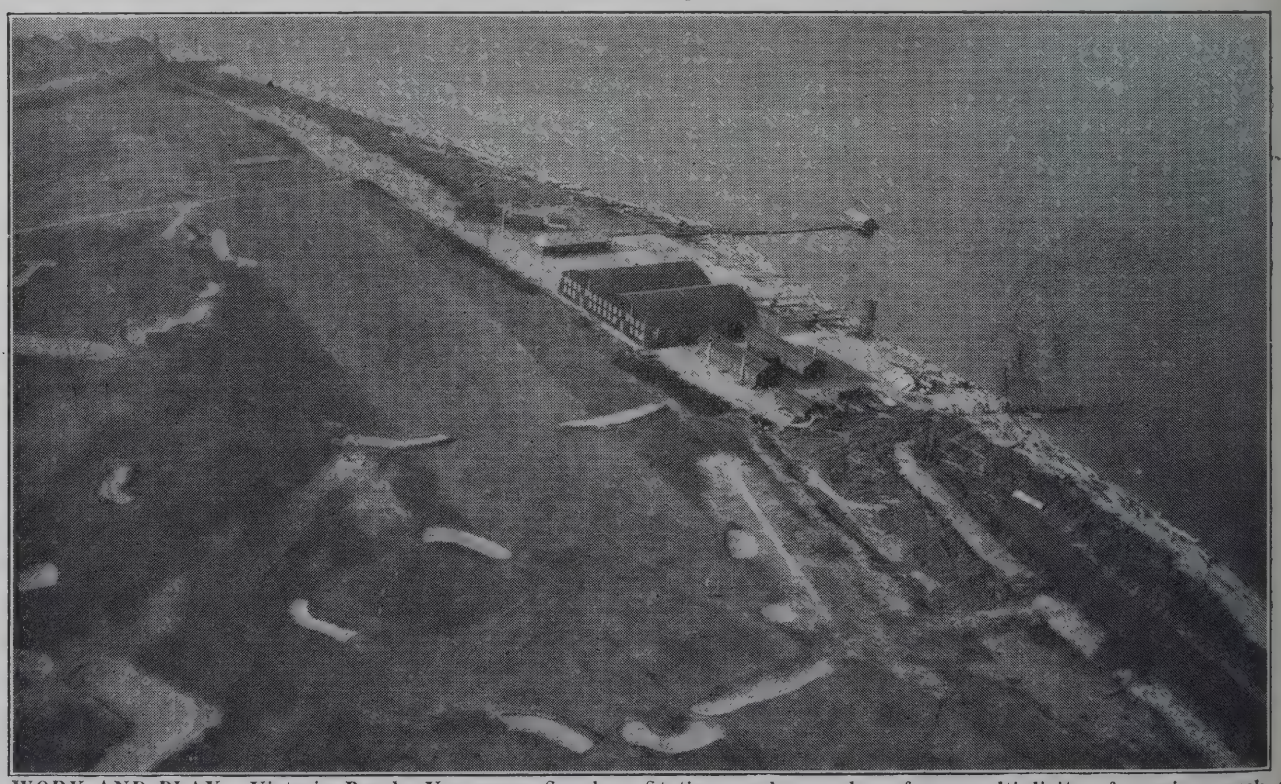
It strikes one that an engine of this sort ought to be very useful for light aeroplanes It is well to remember that the first mile over a closed circuit ever flown by an all-British seaplane was done on a Short fitted with a very early Green engine and piloted by Mr. J. T. C. Moore-Brabazon. Also the success of the first Avro biplane and the best work done on the earliest Avro triplane was done with a Green engine. Besides which the late S. F. Cody won a number of prizes and put up a number of records with one of the bigger Greens.

Two boats in the race are fitted with Sunbeam engines and there is also one boat with a Talbot-Darracq.

An Aerofilms Affair.

A dinner given to the entire staff of Aerofilms Ltd. by the Directors was held on May 8 at The Refectory, Golders Green. The Company's aerial photographers and travellers were recalled from various parts of the country to participate in this event.

Mr. F. L. Wills, Managing Director, was in the chair and took the opportunity of explaining the future policy and the developments the Directors had in view. Mr. Wills then proposed the toast of the Company and Staff and read a letter from the Chairman and Directors expressing their appreciation of the loyalty of the Staff and their good wishes for the future success of the business. Mr. Tidswell, the secretary, replied suitably. The toast of the Ladies was proposed by one of the aerial photographers, Mr. Murrell, and Miss Clapham, head of the Artists' Department, responded.



WORK AND PLAY.—Victoria Beach, Vancouver, Seaplane Station used as a base for a multiplicity of services such as aerial survey, fishery protection, Customs duties, forest fire patrol and, one gathers, golf.



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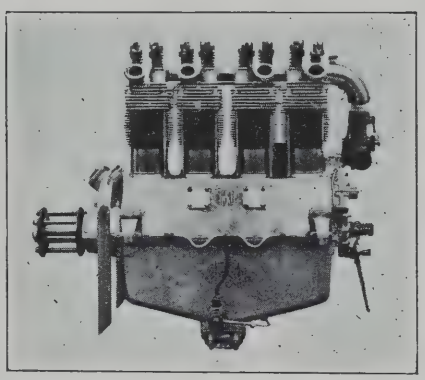


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10 hours on Heenan & Froude Brake	54 H.P.	at	1,800 r.p.m.
50 hours on Calibrated Propeller	54.5 H.P.	at	1,820 r.p.m.
39 hours on Heenan & Froude Brake	54 H.P.	at	1,800 r.p.m.
1 hour on Heenan & Froude Brake (Full throttle at normal revs.)	61 H.P.	at	1,800 r.p.m.
1 hour on Heenan & Froude Brake (At high revs.)	—		2,080 r.p.m.
1 hour on Heenan & Froude Brake (High power and high revs.)	68.25 H.P.	at	1,980 r.p.m.

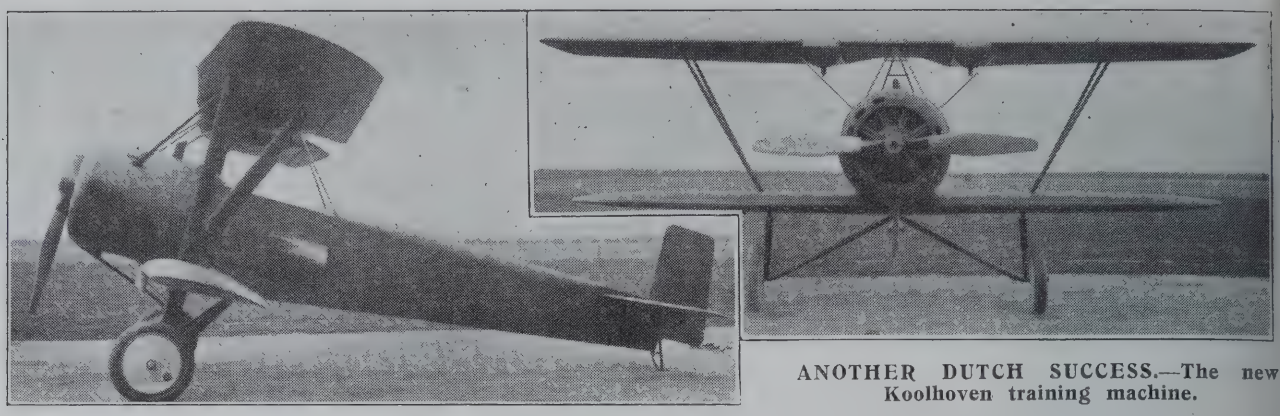
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ANOTHER DUTCH SUCCESS.—The new Koolhoven training machine.

The Dutch East Indies Flight

A lecture arranged by the Anglo-Batavian Society was given before the Royal Society of Arts by Mr. Van der Hoop on the non-stop flight to the Netherlands East Indies on May 13. The Chair was taken by Sir Frederick Sykes.

Introducing the lecturer Sir Frederick Sykes said that Mr. Van der Hoop was educated at the University of Amsterdam and was given a commission in the Netherlands Army when it was mobilised at the outbreak of war. He had transferred to the Air Service and since the War had been engaged on the regular civil air routes.

Mr. Van der Hoop's success in the great flight to the Netherlands East Indies was no less welcome in this country than it was in his own country. Air Navigation was bringing us all together. Mr. Van der Hoop's effort had made great steps in the right direction. The officers and men who were interned in Holland regarded with great affection the people who were so kind to them during that period. Sir Ross Smith and his brother has received great kindness and assistance from the Dutch people in the East Indies on their flight to Australia.

Unfortunately the other two members of the crew, Lt. van Weerden Poelman and Mr. van der Broeke were absent.

Mr. Van der Hoop opened his lecture by paying a very generous tribute to Sir Ross Smith whom, he said, had opened the way to India and the East Indies. He then went on to explain how his own flight had come about. (This part of the lecture was unfortunately lost owing to the noise made by the people who arrived late at the lecture hall.)

Some very good slides were being shown at the same time illustrating the various types of Fokker machines which led up to the F.5 on which the flight was made.

The flight was delayed for six month as the condition of some of the aerodromes on the route would be unsuitable during the period from Apr. 1 to Oct. 1. By Oct. 1 the machine, a Fokker F.VII (fitted with a Rolls-Royce Eagle IX) was ready and had been thoroughly tested by doing 120 flying hours on the Amsterdam-London route. A new Rolls-Royce engine was then fitted and the wireless equipment was removed as Mr. Van der Hoop considered that it was not worth its weight on this particular journey.

The story of the flight is well known to the readers of The Aeroplane as it appeared week by week from the issue of Oct. 1st. It will be remembered that owing to a leaking radiator the engine seized up at Phillippolis between Sofia and Constantinople and a forced landing was made. In his lecture Mr. Van der Hoop gave some delightful personal reminiscences and showed some beautiful slides of the country.

He said that at Phillippolis the landing was made in a rice-field which was found to be crossed with small but deep dykes. None of the onlookers seemed to understand any Western language at all until after about an hour a schoolmaster arrived who knew a few words of German. On the arrival of the authorities fetched by the schoolmaster, the crew were forbidden to leave the machine until their papers had been examined. They slept that night under somewhat cramped conditions in the cabin of the machine. A new engine had to be fetched from the Fokker works and the crew spent some days under somewhat primitive conditions in the nearest Bulgarian town where they suffered from Bulgarian bagpipes and a very inadequate allowance of water for ablution.

At Belgrade Mr. Van der Hoop managed with great difficulty to despatch a telegram to Amsterdam which was delivered three days later.

On Nov. 2 they arrived at San Stephano the aerodrome for Constantinople. At a French aerodrome between Constantinople and Aleppo telephone wires were strung across the aerodrome and on landing a wire was found to be wound round the airscrew, which, fortunately, was undamaged. It It was at this aerodrome that a French pilot told him that the best way of making a forced landing if necessary on the hills which lie between Alleppo and Baghdad was by side-slipping onto the side of the hill.

Mr. Van der Hoop described Hinaidi, south of Baghdad, as a very good and very well organised British aerodrome, where he said the Royal Air Force gave them great hospitality and excellent technical assistance.

Mr. Van der Hoop said that there were plenty of good landing grounds in the Punjab but from Calcutta to Batavia there were no forced landing grounds at all. The country was all jungle. The aerodrome by Rangoon was very poor, just a small race-course surrounded by houses and trees.

He wished to express his gratitude for their assistance, to the British authorities in general and to the Royal Air Force.

An Anglo-Batavian Dinner.

A dinner was given on May 14 by the Anglo-Batavian Society in honour of Mr. Van der Hoop, who flew from Amsterdam to Batavia last autumn. The Chairman of the council, Sir Walter Townley, presided. The guests included Mr. van der Hoop, H.E. the Netherlands Ambassador, Jonkheer Dr. R. de Marees van Swinderen, Air Vice-Marshal Sir Sefton Brancker, Mr. Fokker and Lieut.-Col. I. A. E. Edwards, Deputy Director of Air Transport.

Mr. van der Hoop, responding, expressed his cordial thanks for the British help he received in his flight and said that aviation served as a link between nations.

Japan and the Soviet.

The Times correspondent in Tokyo, in a communication dated May 13, states :—

The *Asahi* is much pleased by the news that the Soviet Government has given permission for Japanese aeroplanes to fly over Siberia. The Soviet Government refuses, however, to permit a continuation to Moscow.

Major Zanni, the Argentine airman, has been forbidden to fly across Soviet territory. He is endeavouring to obtain a reversal of this decision, but if he fails he will continue his world flight by Murukami and Attu (Aleutian Islands) relying for his safety on tugs.



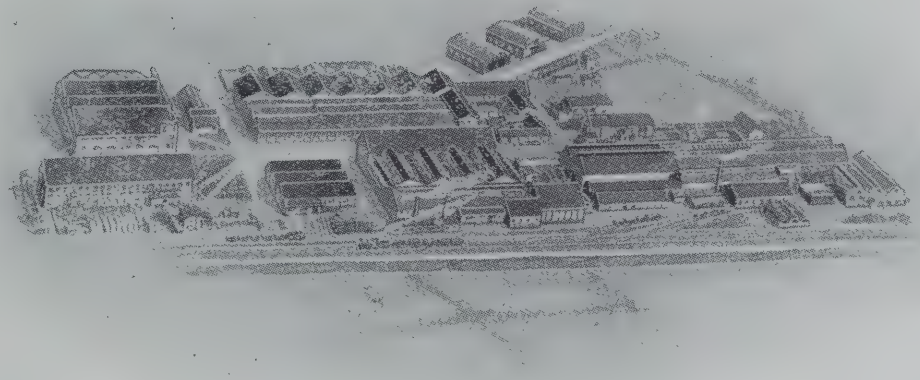


THE F.K.32.—The training machine produced b the Nationale Vliegtuig Industrie to Mr. Koolhoven's design.

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THE PRODUCTION OF AIRCRAFT ON A WAR SCALE.

By W. H. SAYERS.

In his recent address to the members of the Cambridge University Aeronautical Society, Sir Hugh Trenchard laid very great stress on the problem of aircraft supply in the event of war. He pointed out that the war time percentage of casualties to aircraft might be expected to be some thirty times as great as the normal peace rate, and that an Air Force at war might safely look to being reduced to something between 10 and 20 per cent. of its initial strength within the first month of active service.

From this he drew the moral that victory would fall inevitably to that Air Force which could most rapidly organise the production of pilots and aircraft on a scale which would make good the wastage of war. And he appealed to his hearers to devote their brains and their energies to the problems of simplifying the obstacles which exist to the rapid production at short notice of both trained personnel and of new *materiel* for the Royal Air Force in the event of war.

It is quite obvious that this problem of the expansion of production to meet the wastage of war in the Air Force involves quite a number of distinct problems. Some of these are purely Air Force problems, others are of a purely industrial and technical nature affecting the Industry which will be called upon to supply *materiel*, but many are of a type which concern both parties.

How the Next War will Differ from the Last.

Here it is proposed only to consider briefly and necessarily incompletely that part of the problem involved in increasing the rate of production of aeroplanes. It is perhaps not generally realised how great a problem this really is. The conditions of the recent European war form no sort of parallel to those which are likely to obtain in the next. When the last war broke out the military chiefs of all the belligerents had only the very slightest conception of the practical possibilities of aircraft in war. In the early stages of that contest aeroplanes were in service on what amounted only to an experimental scale, and the demand for increased production was of relatively gradual growth following the growth of an appreciation of the military utility of aircraft.

The next will open with a very strong—possibly an exaggerated—belief in the aeroplane as a weapon of war on the part of both sides, and it is perfectly certain that the outbreak of such a war will find most of the belligerent States committed to some sort of a policy, and possessed of some sort of an organisation for an enormous expansion of their output of aircraft.

Assuming that the prophets are correct in their estimate of the potency of the air arm, victory will fall to the side whose organisation works effectively, and defeat to that whose aircraft supplies fail.

What Output will be Wanted?

Taking Sir Hugh Trenchard's figures the Royal Air Force—at its present strength alone—will require an output of aircraft at a rate equal to over 30 times its present consumption and that within a week or two of the beginning of active operations.

What would happen to the British Aircraft Industry if it were suddenly called upon to increase its production in this ratio? According to one authority within and of that Industry the immediate result would be to stop all production of aircraft—even on the present scale—for a period of some months. That this would be the case if all the aircraft factories now in existence were ordered to organise for the building of thirty machines where now they built one to the exclusion of all other considerations, seems extremely probable.

Therefore it is obvious that to some extent at least the existing aircraft factories will be required in the event of war to continue production—accelerated as much as is possible with their existing equipment—and that a large number of factories engaged in other branches of industry will have to be diverted to the production of aircraft and aircraft components.

Output and the R.A.F. Staff.

The rate at which it will be possible to increase the output of aeroplanes depends on a large number of factors, of which one of very great importance is the suitability of the types of aircraft ordered for rapid construction in large quantities. It has to be pointed out here most emphatically that this is a matter by no means entirely under the control of the aircraft designer. It is very largely one for the Chief of the Air Staff, and his Department, who after all have the deciding voice as to what the Supply and Research Department have to produce for the personnel to use in the operations of War.

It is their business to study the strategy and tactics of aerial warfare and to consider how such warfare may most efficiently be waged and consequently what types of aircraft and what complexity of equipment of those aircraft are necessary. And in these deliberations and decisions on this subject it is of the first importance that the problems of the supply of machines in war time should be taken into account.

Neglecting such considerations it might be decided that one aeroplane of type A was worth two of type B and that therefore type A should be approved for production and type B neglected. But if supply were given due consideration it might appear that the production of type B on a large scale could be organised rapidly whereas that of type A presented such difficulties that an expansion of supplies for war purposes was practically impossible.

Military Effectiveness versus Producibility.

The problem which they have to face therefore is not solved merely by the choice of type A on its purely military merits, but involves a decision as to whether at the end of say the first month of war it will be better to possess 20 per cent. of the original complement of type A and no prospect of an increase in the rate of supply for another six months, or to accept the inferior type B because adequate supplies of it will be available at a rapid rate.

Sir Hugh Trenchard pictures two opposing Air Forces, each of an actual strength of 100 machines, both reduced to 20 machines by a month of war, and expreses the opinion that victory will fall to that side which can most rapidly make good these initial casualties.

Suppose that one side has organised on the basis of the replacement of its war casualties by machines of type A above and the other side sets out to produce the simpler and less effective type B.

At the end of two months both sides have but 10 of their original machines in commission, the first side is expecting delivery of 20 machines of type A in the following month, but the other side has already 20 of type B in the air. If the 20 type B machines can force a decision before the opposing A machines can take the field, the military superiority of the A machines is of no value—and their construction is merely a waste of effort which otherwise directed might have turned defeat to victory.

It is obvious therefore that policy in regard to the choice of aeroplane types for production in the event of war cannot safely be guided only by the military value of the type when actually in service, but must take into account the possibility of producing the type under war conditions. And it undoubtedly does seem that the Staff of the R.A.F. have somewhat overlooked this aspect of the problem in drawing up their specifications for new military aircraft.

Every new item added to the standard equipment of an aeroplane involves at the very least the production of the equipment itself, and it usually means a larger, heavier and more complex aeroplane. The process of piling on equipment must eventually lead to aircraft which cannot possibly be produced on a large scale at reasonably short notice, and it is by no means certain that that point has not already been reached.

The Choice of Type for Production.

Quite apart from this side of the question, which is entirely in the hands of the Air Ministry itself, is the question of the methods of construction used in individual machines designed for the same duties. This of course is to some considerable extent a matter for the aircraft designer, but it is not by any means so exclusively the designer's concern as might at first sight appear.

Methods of construction which are cheap and economical in the case of production on a small scale are not by any means necessarily suitable for rapid production on a much larger scale, nor is a form of construction which lends itself to rapid mass production necessarily an economical one when only small quantities are to be produced.

Thus machines designed with an eye to ease and cheapness of production in time of peace may be entirely unsuitable for war time conditions. It may therefore be desirable to encourage the design and construction of machines which will be extremely costly when produced in small numbers in order that the Air Force may be equipped with types which can be produced on a war scale without overwhelming difficulty and delay.

This question as to the difference between types of construction suitable for production on a small and on a much larger scale is one which is not as widely appreciated as it should be in many quarters. Quite a number even of aircraft designers take up the attitude that the problem is largely one of simplification of structure, and that if one can produce a sufficiently simple structure it will serve equally well for production on a small and on a large scale. There is of course a ground for this belief—but the whole matter is not really as simple as it sounds.

Labour Supply as the Determining Factor.

When production on a really large scale is considered it will be found that the essence of the whole problem lies in the supply of labour, or rather in the problem of spreading over

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the maximum possible output the strictly limited supply of skilled and experienced labour which is available.

The method of construction which will permit of the maximum possible output rate depends very largely on the ratio of skilled to unskilled labour which is employed.

In a small aircraft shop in which a few men only are employed each of those men must be a skilled artisan in the sense that he must be capable of turning his hand to a fairly large number of the processes which are involved in producing an aeroplane with practically equal facility. To a very large extent the methods of construction which should be chosen in such a case for the maximum of production would be determined by the ease with which men skilled in particular types of work were available. Assuming that good wood-workers were easily found but that metal-workers were scarce a design involving all-metal construction would not be suitable.

Economical Production on a Small Scale.

But quite apart from such obvious considerations it has to be remembered that because in such a factory skilled labour must be employed almost exclusively it is obviously economical to use the skill of that labour to its full extent, as for instance by giving to individual groups of men the task of constructing relatively complicated structural units from beginning to end.

For instance a pair of wooden seaplane floats can be built by two competent boat builders from the unsawn timber to the finished article for very little greater an expenditure of man hours than would be necessary with a much more complete sub-division of process on this particular job. And if floats are only required at the rate at which a small number of boat builders could produce them, this method of manufacture would be economical and satisfactory.

But imagine the demand for floats to increase to such an extent that all the boat-builders that could be engaged working on the original lines were unable to meet it. The process might be modified by sub-dividing the labour—setting certain men to saw and plane timber, others to setting up frames, and to planking, and so forth—but there is a definite limit to the increase of output attainable in this way.

When the demand exceeds this limit unskilled labour must be called in. Obviously in an emergency—such as that of war—time cannot be wasted in turning unskilled men into boat-builders. What has to be done is so to reorganise the work of construction that it can be sub-divided into a number of simple operations, each of them easily learnt by an unskilled man, and to use the skilled labour available, firstly in supervising the operations of the unskilled, and, secondly, in performing any remanent process which cannot be brought down to the capacity of the unskilled.

Now in the case of aircraft in particular, demand on a war-time scale will require the employment of an overwhelming proportion of unskilled labour. It will of course be understood that by unskilled one here means unskilled in aircraft construction. The rate at which it will be possible to deliver aircraft therefore will depend very largely on the extent to which the work of producing aeroplanes can be spread over the widest field of available labour. A consideration of the various possible methods of constructing aircraft from this particular point of view leads to conclusions which at first sight may seem a little remarkable.

The Drawbacks of Timber for Mass-production.

In the first place, timber, as a structural material, presents serious disadvantages. There is but one method of working timber—that of cutting it. This puts a limit to production—you cannot cut more timber than can be cut by the existing wood-working machinery.

Owing to its physical characteristics, timber cannot be machine-cut to the limits of accuracy necessary for assembly into aircraft structures except under unusual circumstances. Even if it is to the required limits at the time of cutting it will not necessarily be so a day or two later, when it has to be assembled, and more or less skilled hand-fitting may always be required.

Joints in wood members are distinctly undesirable unless the making of them is very carefully and skilfuly executed. Thus the sub-division of wooden structures into small components is difficult, and it becomes necessary to use parts carved from the solid—which means irrecoverable waste of material, and either the passing of a single unwieldy component through a large number of one-man operations—which means time and labour wasted in moving the component about—or else the employment of relatively skilled labour to carry out a series of operations on that component.

Thus the timber-framed aeroplane may be exceptionally simple to produce on a scale so small that it is possible to employ skilled labour throughout the process of manufacture and yet may become impossible to produce on a large scale simply because labour of the kind necessary does not exist in sufficient quantities.

Metal Plated Types.

Very much the same class of argument applies to some forms of metal construction. If one takes, for instance, certain types of metal-covered wings which have been produced in Europe, it will be found that they are comparatively cheap and simple to manufacture for so long as the rate of production permits the employment of nothing but fairly skilful men. Covering a wing framing with thin duralumin sheet and rivetting that sheet on with relatively simple tools does not look a particularly difficult job, but all those who have at one time or another wrestled with thin sheet-metal will realise that it is a job which needs some degree of dexterity and a considerable amount of experience, if really satisfactory results are to be obtained.

And it is work which cannot be so sub-divided as to bring it easily within the capacity of the unskilled and inexperienced. It would scarcely be possible to reduce covering a wing to a process whereby one man applied one plate or put in one set of rivets. Thus this form of construction suffers from one defect of the timber construction, for it leads to component units of considerable size and bulk upon which a complicated series of operations have to be performed.

This unit cannot easily be passed from man to man or from machine to machine for a subdivision of the work which must be done upon it and therefore one again comes to a limit to the possible output imposed by the available supply of skilled labour necessary to undertake a series of varied operations. This type of construction has advantages and up to the limit so imposed can be built rapidly and cheaply.

The Complicated Type of Metal Aeroplane.

As against this type of metal construction there is the type which has been developed largely in steel in this country and to some extent in light alloys in other countries. This is the type wherein the form of the ordinary timber-framed and fabric-covered machine is retained, the only change being the replacement of timber members by light—generally built-up—metal ones.

The detailed design of machines of this type varies considerably in complexity. But it may generally be said that from the usual point of view machines of this type are considerably more intricate in design than are their wooden-framed prototypes. They cost very much more in the design stages. The cost of designing and preparing drawings for a modern British military machine of metal construction may exceed the whole cost of building a machine of similar type in wood. The cost of the jigs, dies, and special tools required to build one such machine may be very large indeed, and the capital cost of the plant which is required in a factory to produce such machines is high. A great deal of technical skill and experience is required in order to overcome the various problems which are encountered in the manufacture of such machines. As a result machines of this type are costly to produce on the small—almost experimental scale—with which one has to deal to-day.

And How it can be Produced.

But machines built on these lines may be much more easy to produce on a really large scale than are the so-called simpler wooden or plated-up metal types. They are composed of a large number of small components which assembled give the appearance of terrifying complexity. But the individual components can themselves be made extremely simple to produce. Thanks to the large number of alternative methods which exist for working metal, and the extraordinary perfection to which metal working machines have been brought, the actual manufacture of the component pieces can be entrusted to machine minders trained only to the supervision of one operation.

Thanks to the accuracy with which these components can be produced by machinery hand-fitting can be done away with, and a very large amount of the work of assembly can be reduced to a series of single operations of the simplest possible character.

The skilled staff necessary to produce one machine of this class is sufficient to supervise the work of a very large number of unskilled operators, and the plant, tools, and jigs which are necessary for that one machine, can if continuously operated on repetition work, produce the component parts for a really respectable output.

Moreover, it has to be remembered that individual components such as are involved in this process of fabricating aeroplanes can be made of a type which could very easily be produced in factories having no capacity whatever for the production of the complete aeroplane. The experience of the last war was fairly conclusive in this respect, and should be sufficient by itself to show that the process of aircraft construction which promises the maximum rate of output of finished aircraft is that of reducing the aeroplane to a series of small components whose production in large quantities can be spread over the maximum field of unskilled labour, and of keeping the skilled labour which is now spread over the whole field of aircraft production to the duties of supervision and of final assembly of complete aeroplanes.

As against these advantages a very considerable period will be required in which to organise the manufacture of com-



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ponents and so forth, and although ultimately a colossal output may be attained, there will be an initial period in which the output is very small or non-existent.

What the Staff has to Decide.

It will readily be seen if the arguments outlined above are sound—and there is not a great deal of room for doubt on this subject—that the problems facing the Staff of the R.A.F. concerning the types of machine which should be encouraged with a view to production on a war scale is no simple one. The right policy to pursue is the one which succeeds, and success or failure in this matter will depend on the course of events following the outbreak of hostilities.

If the next war proves to be a brief and decisive affair, settled within a few days of its outbreak by a decisive air attack on vital centres of one of the belligerents, then a policy which aims at a rapid increase in the output of aircraft at the end of a month will be of no use, because the war will be over before that policy can become effective.

If the war can be expected to last for some considerable period is it going to be better to aim at a tenfold increase in output after three months, or a thirtyfold increase in six months? This is not an easy question to answer, but it requires answering. For the extent to which it will be profitable to complicate the design and to distribute production over the available labour field will depend very largely on what ultimate rate of production is required and the time which can be allowed for working up to that rate.

For instance, it is conceivable that the capacity to double the peace output of aircraft within a couple of months of the outbreak of war might prove to be decisive. If that were the case the situation could probably best be met in the existing aircraft factories producing machines of types found suitable for peace time production.

But if the doubled output in that period were not decisive, and the war went on, aircraft production on that basis would begin in time to approach a "ceiling" and it is possible that by the end of a year the output which could be reached in this way would be distinctly inferior to that which could have been attained after the same lapse of time had a policy of mass production of metal aircraft components been followed.

But this latter policy would not—in all probablitiy—have permitted any increase in production at all in the first few months of the war.

The dissipation of the nation's available resources over two or more distinct programmes—all but one of which is pretty certain to prove to be unsuitable to the event—is obviously not within the range of practical politics, so that the security of the country in the event of war would seem to depend—under present conditions at least on the ability of the Air Staff to guess correctly the probable trend of events and on the adoption by them of a policy as to the method of production which will meet those events.

It has been very truly said that the lessons of war are immutable, and probably the most immutable of those lessons is that the actual course of hostilities can never be foreseen. The chances that the Air Staff of any country will correctly predict the best policy to be pursued are therefore remote. Fortunately the enemy staff is just as likely to be hopelessly out as is our own.

As this country is very loth indeed to follow the advice of its military experts in any matter vitally affecting its safety the chances are greatly in favour of the next war opening with our opponents hopelessly committed to a wrong policy in this matter while we ourselves are free to muddle through in our usual style. This is a comforting reflection physically, but scarcely an intellectually satisfying solution of the problems discussed.

The U.S. Navy's P.N.9 Flying Boats.

The P.N.9 flying boat, which, as recently recorded in this paper, put up a non-stop flight of nearly 28 hours in the course of test at Philadelphia, is a development of the earlier P.N.7 boat, and therefore a direct descendant of the Felixstowe F. boats, and through them, of the Curtiss America.

P.N.7 was produced by fitting an F.5L. hull with a new superstructure, which embodied a single-bay biplane wing cellule of thick, high-lift section, and of reduced area. The result of replacing the original seven sets of interplane struts by two sets only and of generally cleaning up the design was a notable improvement in speed and all-round performance. The performance was further improved by fitting two Wright T.2 engines of 525 h.p. in place of the two Liberties of the F.5L.

The next step in the development was the design of an all-metal hull to replace the original F.5 type. This hull, which maintained the general lines and arrangement of the original was built of aluminium alloy and weighed over 500 lbs. less than the wooden prototype. This hull with the wings and power plant of P.N.7 formed the P.N.8 type.

P.N.9 was produced by replacing the Wright engines of P.N.8 by two of the new Packard 1A. 1500 engines, fitted with reduction gears, which are rated in this form at 480 h.p. for a weight of 850 lbs. each. This new power plant is appreciably lighter than that of P.N.8, is practically as powerful, thanks to the geared-down airscrews, and consumes rather less fuel.

At the same time it has been possible appreciably to increase the fuel capacity, which in P.N.9 amounts to about 1,200 gallons.

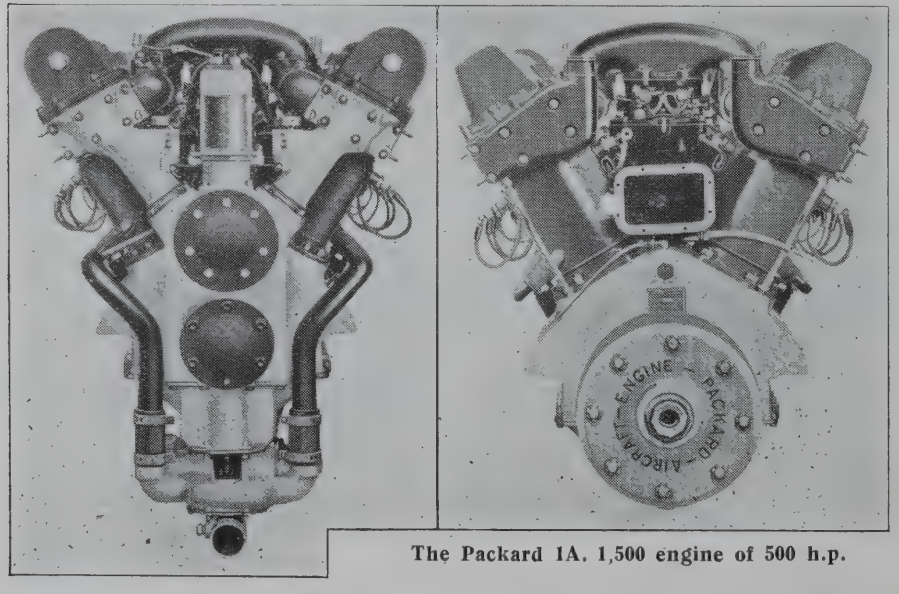
The statement originally made that this type of machine was fitted with the Packard 1A. 2500 engine of 725 h.p., was the result of an error of interpretation of the original report.

Specification of the P.N.9.

Span (top)	72 ft. 10 in.	Weight empty (appr.)	9,000 lbs.
Span (bottom)	67 ft. 2 in.		
Length	49 ft. 2 in.	Maximum weight loaded (appr.)	18,000 lbs.
Height	16 ft. 6 in.		
Wing area (appr.)	1,250 sq. ft.	Speed level (normal Service load)	128 m.p.h.

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The Packard 1A. 1,500 engine of 500 h.p.

The engine here shown is the 500 h.p. high-compression ungeared model and not the low-compression geared down-type fitted to P.N.9. The engine shown has a bore of 5⅜ in., stroke 5½ in., weighs 720 lbs., and gives 500 h.p. at 2,000 r.p.m.


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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 21; Tuesday, 25; Wednesday, 21; Thursday, 21; Friday, 24; Saturday, 21; Sunday, 21.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 95, passengers 345, freight 8½ tons.

AIR UNION:

Paris—London: Machines 27, passengers 145, freight 7½ tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 14, passengers 46.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

DE HAVILLAND AIRCRAFT CO. LTD.

Machines 8, passengers 2.

Total number of trips by British machines: 103, carrying 347 passengers. Foreign machines: 51, carrying 191 passengers.

Comparative Figures:

For week ending May 18:

Machines, 154: Passengers, 538; Crews, 191; Total personnel, 729.

Corresponding week, 1924:

Machines, 81; Passengers, 271; Crews, 130; Total personnel, 401.

Corresponding week, 1923:

Machines, 105; Passengers, 353; Crews, 175; Total personnel, 528.

Corresponding week, 1922:

Machines, 162; Passengers, 337; Crews, 195; Total personnel, 532.

Corresponding week, 1921:

Machines, 89; Passengers, 350; Crews, 106; Total personnel, 456.

Corresponding week, 1920:

Machines, 91; Passengers, 138; Crews, 98; Total personnel, 236.

Croydon Notes.

AT THE SIGN OF THE BLUE BALLOON.

Last week, on May 14, Capt. Barnard distinguished himself by having his early cup of tea in London, Eng. (We have to specify countries in these days of shuttle services.) He was in Cologne for breakfast at 9 a.m. He was back in London for lunch at 1.30 p.m., being presumably dissatisfied with the soup or the entrées which he had had at Cologne on previous occasions. He then seemingly decided to give Cologne another chance and flew back for dinner, arriving there soon after 7 p.m. As he did not set out from Cologne again immediately after dinner we suppose that the food in Germany, or at any rate the coffee and liqueurs, cannot be so ill cooked or ill served as it has been painted. Anyhow it was a fine show on Mr. Barnard's part. But what *will* his Union say?

A Handley Page machine belonging to Imperial Airways had a bit of bad luck here on Saturday when a wheel came off owing to the sheering of two locking pins. The wheel, rejoicing in its freedom, went bounding across the Aerodrome like a spring lamb which has inadvertently nibbled a bit of mint. Thanks to Mr. Dismore's excellent pilotage no damage to speak of was done. The abruptness of the stoppage was doubtless explained by some nimble-minded official as due to "those new four-wheel brakes," as the passengers all seemed perfectly happy and are said to have left for Paris later on another aeroplane.

Mr. Harry Tate happened to be on the Aerodrome at the time, and although his many admirers will regret to hear that he is now clean-shaven we saw him puff his lip in sympathy as though to set a moustache revolving like a propeller.

Mr. Tate afterwards ascended the control tower where he spent an interested half-hour, and although we hung about on the tarmac below we had not the nerve to strike matches on the legs of that austere edifice or to start a conversation by addressing Mr. Tate as "pappa."

Among the notable air cargoes of the week were some "birds" from Holland which K.L.M. brought in on Saturday evening, and which were described as "yellow naped amorous." These are not the same type as those who were wont to rest in the vicinity of the Eros statue in Piccadilly Circus and who are yet to be seen in that neighbourhood, or else around Trafalgar Square, where they may be heard from dusk onwards cooing softly to the old trouts who inhabit the deep waters of the pond, rising to the surface occasionally to bite the ear of some young naval cadet or subaltern, who, impressed by the greatness of "the Empire," leans hard over to look up at the Nelson column or stoops to peer wistfully down Whitehall towards the War Office.

No! these were merely a species of parrot. They wisely made no comment upon air travel until after they had left the Aerodrome, though possibly their new owner has heard all about it by this time.

Mr. Jock Anderson grazed his cheek slightly with a lifeline in making a parachute descent from Capt. Muir's Avro the other day, and the Press, or certain sections of it, promptly began to scream about "close calls" and "narrow shaves," and so forth. Incidentally they dubbed Mr. Anderson as Major in their hysteria, although it seems probable that he agrees with Mr. Rogers who was gratuitously promoted Captain by the Press last time he flew to Zurich and back. "If," said Mr. Rogers, "the jolly old pay and allowances went with the bally rank one would not find it so beastly awfully boring. Eh! What? No!"

Probably most journals have some ex-pilot on their staff, but do they ever send one a-reporting on Aviation matters? Not they! Ex-pilots are sent to interview Baptist ministers or submarine commanders, and ex-employees of the Underground are sent to Aerodromes when anything is on, or so it seems.

On Wednesday, the 13th, Mr. Van der Hoop gave an extremely interesting lecture with excellent photographic slides to the Royal Society of Arts, upon his Amsterdam-Batavier flight and on the following evening the Anglo-Batavian Society gave a dinner in Mr. Van der Hoop's honour. Major-General Sir Sefton Brancker gave us to understand that Holland was one of the finest countries in the world and the Dutch Ambassador had much the same opinion about Great Britain.

Mr. Alan J. Cobham was there, but since he told one that Croydon Notes had been worse than usual lately, without realising who had been writing them, one will not report his speech, although it was one of the best of the evening. After all, the only way in which to write really good stuff would be to fly home through the ether, say from Berlin, swooping occasionally to avoid an eagle, but otherwise letting the prolific pen of the journalist aviator have its way with a writing pad held on the knees. Mr. Cobham taught Miss Heather Thatcher to fly the other evening, one heard it on the wireless, and now she knows how, and that's that.

Secrecy in Excelsis.

Some of the new types of machines now being produced for the Air Ministry are so very secret that even the animals after which they are named seem to be on the secret list. At least so one would judge. What is a Jack-cock or a Gaw-cock anyway?

The Gloster racer with direct drive Napier, the land version of the Felixstowe unterseeboot, is reported to have been flown successfully at an unknown destination in Lincolnshire. It was not flown at Martlesham as the surface there was considered to be too rough for preliminary tests. The machine one hears is now at the said unknown large open space in Lincolnshire awaiting further tests. The cadets are not allowed to fly it.

The Royal Aero Club's Affairs.

SIR MORTIMER SINGER.

A letter has been received by the Royal Aero Club from Sir Mortimer Singer, K.B.E., intimating his wish to retire from the Committee on account of being unable to attend the meetings regularly while residing in the country. His resignation was accepted and the Duke of Sutherland was elected to the vacancy.

On the motion of the Chairman the Committee passed a unanimous vote of thanks to Sir Mortimer Singer for his valued services as a member of the Committee for the past fifteen years. Presumably the thanks are due for work done prior to 1914, as one cannot recall that Sir Mortimer has taken any interest in flying since that time.

THE CHAIRMAN OF THE R.AE.C.

The Committee of the Royal Aero Club has unanimously elected the Duke of Sutherland Chairman of the Club and Lieut.-Col. F. K. McClean, A.F.C., Vice-Chairman.

THE R.AE.C. RACING FUND.

The following donations to the Racing Fund of the Royal Aero Club are reported: Mr. A. S. Butler, £100; Major Vernon A. Bradshaw, £26 5s.; Mr. A. E. Savill, £5 5s.

The following sums allocated from the Racing Fund by the Racing Committee have been approved by the General Committee: The King's Cup Prizes, £250; ditto Expenses, £250; the Grosvenor Challenge Cup Prizes, £150; the August Air Race Meeting Lympne Prizes, £820; the Schneider Cup Expenses, £250. The total is £1,720.

R.AE.C. TIMEKEEPERS.

The following timekeepers have been appointed for Royal Aero Club contests for the year 1925: Col. F. Lindsay Lloyd,

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"Reference must be made to one or two other trifling trifles, more directly connected with the machine itself. For instance, during this 17,000 mile flight there *were* certain occasions when they had to land on *terra firma* and take off again. This is where the Palmer Aero tyres did their little bit—and they did it very well too. Many of the aerodromes were—well, somewhat rough and hard, while others consisted (wholly or in part) of the very best mud. In either case the tyres stood up splendidly, and the special shape of tread prevented the machine from sinking into the soft places and turning turtle. In addition, the tyres put in some 50 miles' work on rough roads (when transporting the machine to suitable taking-off grounds), while, except for the small quantity of Baghdad air, the air in them was the same from start to finish."

"Flight," 26th March, 1925.



The Palmer Aero Wheel and Tyre as fitted to the D.H.50. The tyres are of the broad tread pattern, a type introduced by Palmer during the war. They are specially designed to facilitate landing on soft ground.

STANDARD SIZES OF PALMER LANDING WHEELS AND TYRES.

Tyre Size	Wheel No.	Hub		Track Line
		Length	Bore	
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
,,	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
,,	138	130.	38.09	Central
575×60	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
800×75	21	160.	28.	Central
,,	34	150.	31.75	104/46
,,	111	150.	38.09	104/46
700×75	78	178.	44.45	132 46
,,	79	178.	44.45	Central
,,	100	178.	38 09	132/46
,,	101	178.	31.75	132/46
00×100	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
700×100	99	178.	38.89	132/46
,,	112	150.	38.09	Central
650×125	119	178.	55.	132/46
,,	147	178.	55.	Central
750×125	77	178.	44.45	132/46
,,	92	185.	55.	135/50
,,	95	185.	55.	Central
,,	96	178.	55.	132/46
,,	99	178.	38.89	132/46
,,	112	150.	38.09	Central
800×150	82	185.	55.	135/50
,,	85	185.	55.	Central
,,	161*	185.	55.	135/50
,,	163*	185.	66.67	135/50
,,	169†	185.	55.	135/50
,,	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
,,	150	185.	55.	Central
,,	167	185.	55.	125/60
,,	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
,,	210	185.	60.32	Central
1000×180	148	220.	80.	Central
,,	149	185.	55.	Central
,,	155	220.	66.67	Central
,,	166	185.	55.	125/60
900×200	107	185.	55.	Central
,,	108	185.	55.	125/60
,,	128	220.	66.67	Central
,,	137	250.	80.	Central
,,	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
,,	136	250.	80.	Central
1250×250	133	250.	80.	Central
,,	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
,,	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

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(304)

C.M.G., C.B.E.; Mr. A. G. Reynolds, Mr. E. V. Ebblewhite, Mr. F. T. Bidlake.

A "Lighter than Air" Aircraft Committee.

The General Committee of the Royal Aero Club has appointed the following Committee to deal with all questions relating to "Lighter than air" Aircraft :—

Lieut.-Col. John D. Dunville, C.B.E. (late R.A.F.); Commander F. L. M. Boothby (late R.N.); Mr. Griffith Brewer, Lieut.-Commander C. B. Burney, C.M.G., M.P. (late R.N.); the Lord Edward A. Grosvenor, Major G. H. Scott, C.B.E., A.F.C. (late R.A.F.) and Mr. H. B. Wyn Evans, M.B.E.

The Secretary of State and the Napier Co.

On May 15 Sir Samuel Hoare, Secretary of State for Air, paid a visit to the Napier Works, as he desired to compliment the operatives on the workmanship in the Napier aero-engines, following his recent visit to Iraq, when he used Napier-engined machines, either Vickers Vernons or D.H.9as, during his tour of over 3,500 miles.

After an inspection of the Works, round which he was conducted by Mr. H. T. Vane, the Managing Director, and Mr. George Pate, the Chief Engineer, Sir Samuel was introduced to a mass meeting of the workpeople by Sir Harry Brittain, M.P., a Director of the Napier Company, and spoke to them as follows :—



The Secretary of State addressing the employees of D. Napier and Son Ltd.

Friends of the Napier Works: When Sir Harry Brittain gave me the invitation to come down here and meet you this morning, I was very glad to accept it. I remember two years ago when I was Secretary of State for Air before, I came down here and I then found the Works a good deal less active than they are to-day, and it is a great pleasure to me to come back after two years and find the shops more fully employed and apparently with more men employed than were engaged two years ago, as I can assure you there is no work of more urgent national importance than the work you are now engaged upon.

It has been a great source of pride to me when I have travelled about the World by air, whether in Europe, or whether on my recent journey in Iraq, to find that the reputation of the Napier engine stands as high as it does.

I remember two years ago when I made an air tour of Europe, everybody was full of the reputation of the Great British engines, and so it is to-day.

During the last few weeks I have had the opportunity of testing by my own experience the performance and reliability of your work. As Sir Harry has just said we have returned from this long journey which we have been able to carry out in the course of a few weeks, without any mishap at all and without having to alter in any way the very big programme we set out for ourselves. The whole of that tour by air was made in machines with engines that had been made here.

The greater part of the tour was made in the big "Vernon" troop carriers with two 450 h.p. Napier engines in them. When we went to parts of the country where we could not fly with big machines, owing to the absence of large landing grounds, we flew in D.H.9as again with Napier engines. I spent a good many hours of a good many days looking out of the window of the aeroplane and what I saw was the word "Napier" written on the engine on each side. That gave me great confidence. I felt there was no risk about it, and there was no risk about it.

There were Mr. Amery, myself and certain officers of our two departments travelling very often with two, three, four or even six machines. Plenty of opportunity for something to go wrong. Nothing did go wrong—we arrived up to time wherever we went, we were never held up

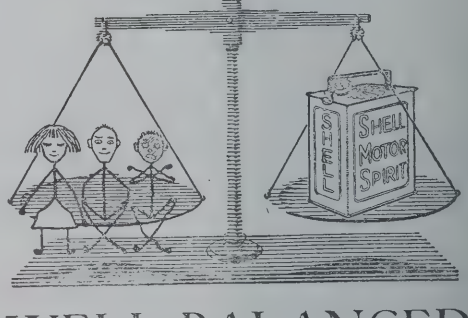
It is the British workmanship. It is the tests that go on here. It is the work you put into the engines you turn out at these Works that we were able to make a journey that a few years ago would have been impossible.

I am here to-day to tell you what I think about your engines, the work you put into them, and to assure you that your work is of great National importance and to wish you good luck and to hope that the reputation of the Napier engine will always stand as high as it does to-day.

The Lancashire Aero Club.

Among the work at present going on is the reconditioning of the Club's Instruction Machine, the L-P-W Monoplane. A Douglas 736 c.c. engine, complete with airscrew, etc., has been presented by Mr. George Parnall and this is being fitted. Members are working on Thursday evenings on this. The work is carried out at Bowdon, Cheshire, under the direction of Mr. Tom Prince, and as soon as the L-P-W is finished, about the middle of June, it will be moved to the Club's shed at Woodford Aerodrome. Mr. Raynham has very kindly given the airscrew which he used on his Douglas 736 c.c. engine at Lympne in 1923 to the Club. This is being fitted on the second Douglas engine.

On May 9 a large number of members met at the Club's temporar workshop in Didsbury. The wings, tail planes, elevators, etc., b longing to the L-P-W were stripped and after inspection of the woo work, which proved to be in good order, the whole were recovere It should be noted that all this work was finished in one day. Bag of the cloth were made by A. V. Roe and Co. Ltd., and these we slipped onto the wings like a stocking. It only remained to tac and stitch the covers where required. Three members worked each wing, elevator and tailplane. By evening the surfaces we ready for doping.—J. F. L.



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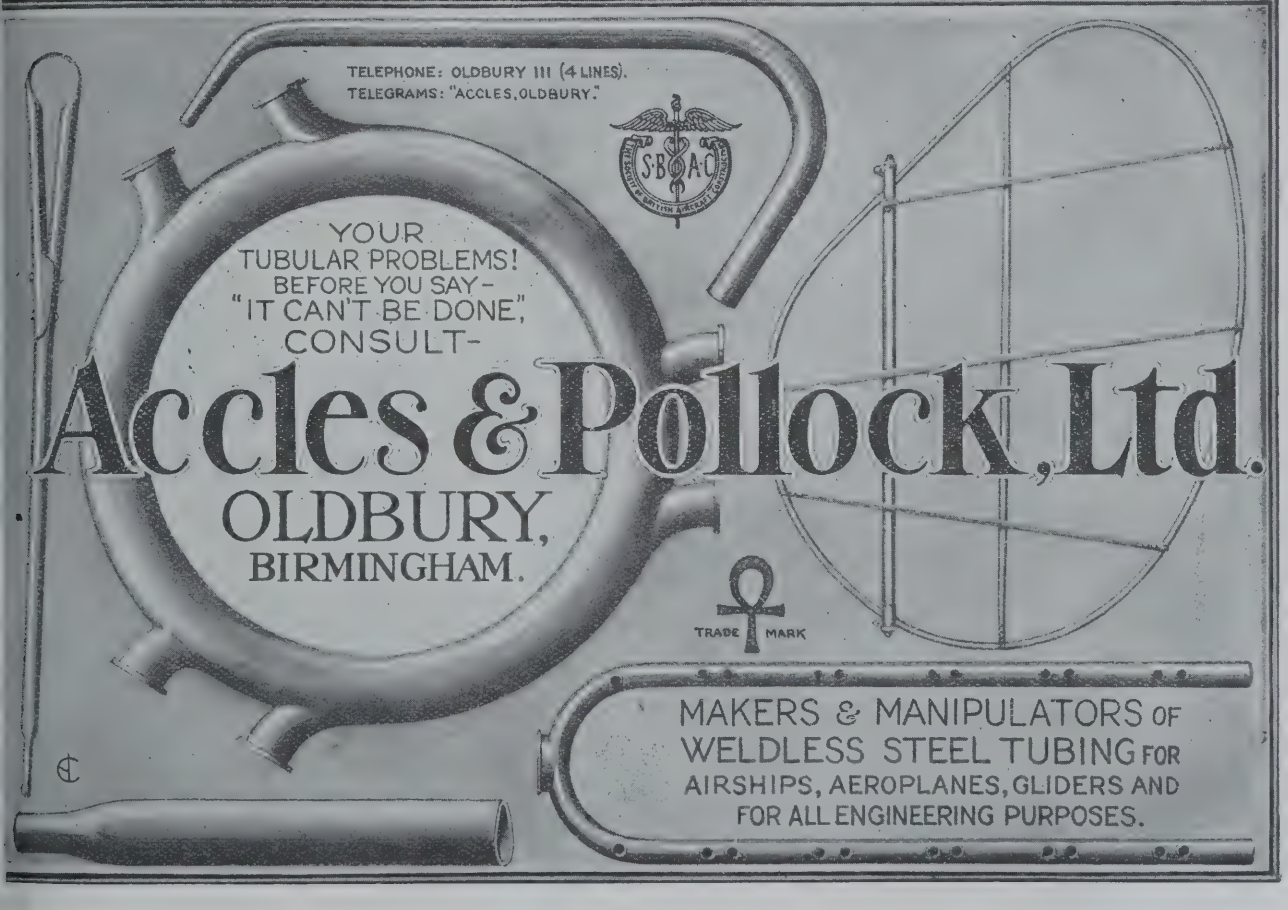
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THE GLOBE TROTTERS.

TOKYO—AMSTERDAM.

A *Reuter* message from Osaka dated May 14th states :—

Major Zanni, the Argentine pilot, had an accident while attempting to leave for Kasumigaura at about noon to-day. His seaplane overturned owing to the collapse of a float in the heavy seas. A launch immediately proceeded to the scene of the accident and rescued the pilot and his two passengers, who were none the worse for their immersion. The machine was towed by the launch to land.

The Times of May 18 in a communication from their own correspondent at Tokyo states :—

The damage to Major Zanni's seaplane is more serious than was supposed at first. The fuselage and the bottom plane have been strained in addition to the undercarriage, and the sea water has damaged the engine. Major Zanni estimates that the necessary repairs cannot be made in less than a month, and as fogs then close over the Kuriles until September, postponement of the flight is inevitable. It is, indeed, probable that he may have to abandon the flight.

Major Zanni is waiting for instructions from the Argentine. The trawlers which were to guard his course will arrive shortly.

ROME—MELBOURNE.

The Marchese di Pinedo who, with a mechanic, Campanelli, is attempting to fly from Rome to Melbourne, arrived at Calcutta at 2.30 p.m. on May 12. The flight from Coconada, Madras, was uneventful and he alighted on the river at Ballay some hours ahead of his time-table.

This portion of the flight is particularly interesting because it is the first to be made all round the coast of India. Other globe-trotters have crossed India from Karachi to Calcutta direct.

They left Calcutta on May 13 and arrived at Akyab the same day. At Akyab they experienced rough weather and were compelled to anchor several miles up the Kaladan River.

They spent the night on board their Savoia seaplane, and arrived at Rangoon on May 15, where they spent two days overhauling the machine.

A Continental Air Line Combine.

The Berlin correspondent of *The Times*, in a communication dated May 8, states :—

It is announced that the negotiations for an international combine of air traffic companies have been brought to a conclusion, and that a share company entitled the "Europa Union" has been formed under the management of the Junkers Air Traffic Company. The preliminary capital is stated to be 50,000 marks (£2,500), to be increased next week to 10,000,000 marks (£500,000).

The following firms are to be in the combine :—Ad Astra Aero, Zurich; Aero O.Y., Helsingfors; Esthonian Air Traffic Company, Aeronaut, Reval; Aero Transport Company, Stockholm; Bavarian Aero Lloyd, Munich; Danish Air Transport Company, Copenhagen; Danzig Air Post Company, Danzig; Lettland Air Traffic Company, Riga; Austrian Air Traffic, Vienna; Junkers Aeroplane Works, Dessau; Junkers Air Traffic Company, Berlin; Rumpler Air Traffic Company, Munich; Silesian Air Traffic Company, Breslau; Ruhr Air Traffic Company, Essen; Saxon Air Traffic Company, Dresden; and S.W. German Air Traffic Company, Frankfurt.

New Company.

FAIREY AVIATION COMPANY.—Fairey Aviation Company, Limited, was registered as a "public" company on May 2, with a nominal capital of £10,100 in £1 shares (10,000 preference and 100 ordinary). The objects are :—To adopt an agreement with the Fairey Aviation Co. Ltd. (incorporated in 1921) and its liquidator; to manufacture and deal in waterplanes, aeroplanes and aerial conveyances, and aircraft of all kinds, and the component parts thereof, including engines and all kinds of machinery, and apparatus for use in connection therewith etc. Minimum cash subscription : 7 shares.

The first directors are :—C. R. Fairey, Grove Cottage, Iver, Bucks, aeronautical engineer. F. G. T. Dawson, Manor House, Hambledon, Bucks, aeronautical engineer. C. O. Crisp, 5, Lansdowne Road, Holland Park, W., solicitor. Lt.-Col. V. Nichol, D.S.O., D.S.C., Oakwood, Redhill, Surrey. C. R. Fairey, F. G. T. Dawson and C. O. Crisp are permanent. Remuneration : £250 each per annum (chairman £300) free of income tax.

Solicitors :—Ashurst, Morris, Crisp and Co., 17, Throgmorton Avenue, E.C. The registered office :—Cranford Lane, Hayes, Mdx.

PERSONAL NOTICES.

MARRIAGE.

BRADBURY—SAYER.—On Apr. 14, at the Garrison Church, Risalpur, N.W.F.P., India, by the Rev. Harold Spooner, O.B.E., M.C., M.A., Flg. Off. John Bradbury, son of John Bradbury, Esq., I.S.O., of Ardington, New Barnet, to Norah Ethel Sayer, Q.A.M.N.S.I., daughter of the late John Sayer, Esq., of Bridgwater, Somerset.

FORTHCOMING MARRIAGE.

AINSCOW—SIDDELEY.—A marriage has been arranged, and will take place at Kenilworth, on June 11, between James Arthur Ainscow, M.B., Ch.B., only son of Dr. and Mrs. Ainscow, of Beech Lanes, Birmingham, and Nancy Mabel Mercer, elder daughter of Mr. and Mrs. J. D. Siddeley, of Kenilworth. [Mr. Siddeley is the Managing Director of Armstrong-Whitworth Aircraft Ltd. and of Armstrong Siddeley Motors Ltd.]

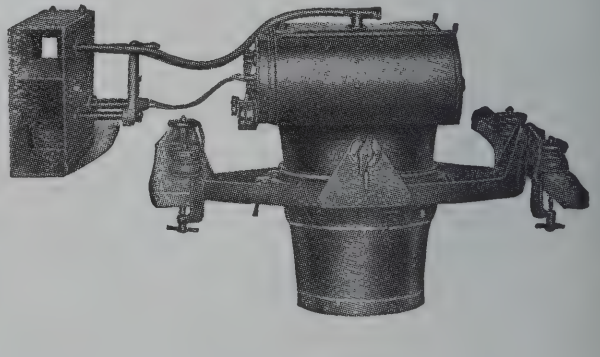
BIRTHS.

BOLAS.—On May 11, at 7, Windsor Terrace, Clifton, Bristol, to Winifred Georgina, wife of Harold Bolas—a daughter.

HUDSON.—On May 11, at 29, Augusta Gardens, Folkestone, to Molly Lepel (*née* Glass), wife of Flg. Off. E. V. H. Hudson, R.A.F.—a daughter.

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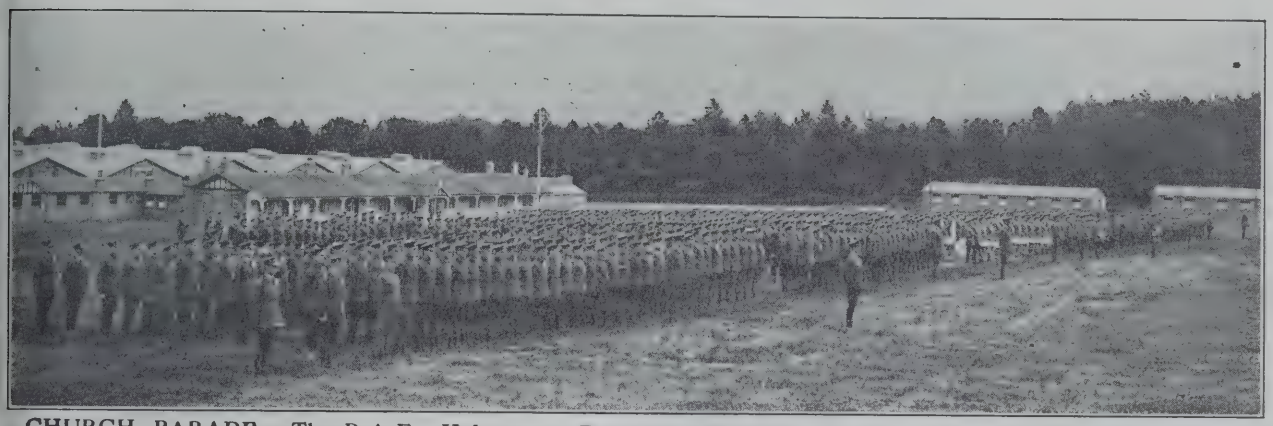
THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. Grey

Vol. XXVIII. No. 21. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

"SOME SUNDAY MORNING."



CHURCH PARADE:—The R.A.F., Halton, on Church Parade. This photograph gives an idea of the general smartness on parade of an R.A.F. Unit.

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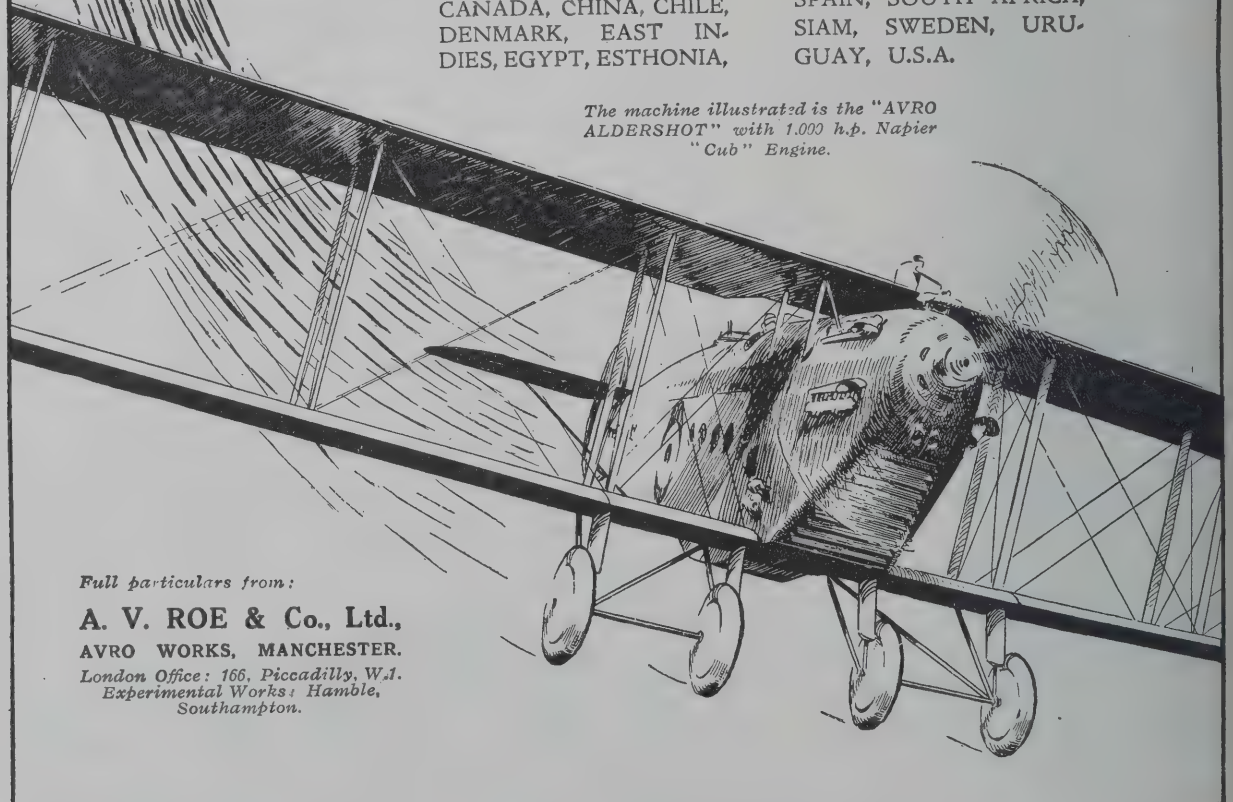
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MAY 27, 1925.

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Incorporating
Aeronautical Engineering

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AIR LINE DEVELOPMENT IN THE STATES.

On various occasions in this paper the belief has been expressed that when aviation begins to move in the States it will move with startling rapidity because that country is so eminently suited for the operation of air transport. The inauguration of the Ford Air Lines has already been recorded in this paper and now comes the news of a still more important development, in which the names of Mr. Henry Ford and his son Edsel Ford are associated by the newspapers with about the most important aeronautical group in the United States.

This development was notified in *The Times* of May 23, as follows:—

New York, May 22.

Representatives of a number of important aeronautical and financial interests, among them the Curtiss and Wright aeroplane companies, Mr. Edsel Ford, son of Mr. Henry Ford, Mr. William Wrigley, jun., Mr. Marshall Field, Mr. William A. Rockefeller, and other Chicago and New York capitalists, organised, at a meeting in Chicago yesterday, the National Air Transport, Incorporated, with a capital of $10,000,000 (£2,000,000). Next autumn the company will begin a night freight express service of aeroplanes between New York and Chicago.

Colonel Paul Henderson, Second Assistant Postmaster-General of the United States, who has been in charge of the United States air mail service, has resigned from the Government to become general manager of the new organisation. The president is Mr. Howard Coffin, of the Hudson Motor Car Company; the chairman of the Executive Committee is Mr. Clement Keys, of the Curtiss Aeroplane and Motor Company.

The present plans of the company have to do only with a service between New York and Chicago, over the Government lighted mail route. Later, there will be other services from Chicago to Southern and Western cities. It is probable that the aeroplanes used by the company will be manufactured by Mr. Henry Ford.

Mr. H. S. New, the Postmaster-General of the United States, has expressed strong approval of the project, which he regards as an outstanding development of American commercial aviation. He has promised to support it in every practical way.

The names of those concerned are all of more than ordinary interest. Taking them in the order mentioned Messrs. Henry and Edsel Ford are already well known to everybody in this country. Mr. William Wrigley may be called the Chewing-Gum King of the United States. Mr. Marshall Field is the owner of the biggest department store in New York, which also does an enormous mail order trade. And Mr. William Rockefeller represents oil and railways. Thus it will be seen that the leading industries of the United States are represented, and that at any rate adequate capital is assured.

From the purely aeronautical point of view the names of those mentioned subsequently are actually of more interest. Those who have read THE AEROPLANE during the past few months are probably already familiar with most of them.

Colonel Paul Henderson is the man who made the U.S. Trans-Continental Air Mail between New York and San Francisco the most successful air line in the World, in that its organisation is so perfect and its regularity so great in spite of being compelled by lack of money to use obsolete aircraft and wholly inadequate mechanical equipment on its various stations. Col. Henderson is responsible for the dictum that "the success of an air line lies on the ground" and does not depend on the air. His lighting and signalling arrangements account for the success of the line, and he spent his money on them instead of on new machines of out-of-date or obsolete design, as has been done in this country.

Apart from that success Col. Henderson is one of the very few really big men whom one has met. He is one of those fortunate people who can be enthusiastic without becoming excited, and all who have met him are at once impressed by his absolute sincerity and honesty of purpose. In him the National Air Transport company has acquired the greatest possible asset. But there are many who will regret that a man of his outstanding ability should leave the Government to engage in business; for even in the United States the percentage of politicians who are at once able and honest is not by any means high.

There is at any rate the consolation that when the United States actually goes to war Col. Henderson's services will be at once available to the nation. And he will be all the more valuable because of the experience which he will have gained in the meanwhile.

Mr. Howard Coffin, the President of the new concern, is one of America's ablest industrial financiers. Among those who know him he is noted quite as much for his private beneficence as for the success of his public operations. During America's participation in the War 1914-18, Mr. Howard Coffin was chief of the Aircraft Production Board in the United States, which if the War had endured would in the course of another twelve months have swamped Europe with American-made Handley Pages and de Havillands.

Mr. Clement Keys, the Chairman of the Executive Committee, is the man who reconstructed the Curtiss Company when it was at its lowest ebb. He is a Canadian by birth and retains his Canadian nationality though he is one of the best-known financial men in New York. Of him it may be said that he has the imagination of a poet, the faith of a fanatic and the cool business brain which succeeds in Wall Street.

The paragraphs quoted from *The Times* do not make quite clear whether the proposed company is to take over the Ford Air Lines but a private letter from America states definitely that the American Airways Corporation, by which the writer evidently means this National Air Transport Company—one does not know which is the correct title—is planning to take over the Chicago-New York night mail service and that Mr. Edsel Ford is one of the many investors in this project as a means of helping aviation in every way.

When one was in America Col. Henderson told one definitely that he hoped to run a Chicago-New York night mail service regularly. This was to be an addition to the San Francisco-New York service which passes through Chicago but at hours which do not help the business correspondents between Chicago and New York. Though the present Corporation was not then being discussed Col. Henderson did say that he hoped that some such line might be run by a private concern and not directly by the Government.

The correspondent to whom one has already referred says that the American Airways Corporation is not connected with the Ford Air Lines though they will probably both be using Stout Metal Airplanes.

The connection of Mr. Clement Keys with the National, or American Air Line suggests that at any rate Curtiss engines will be used in future instead of Libertys.

If the statement be true that the Wright Company is also concerned the probability is that the big-powered Wright engines will also be used. It is possible however that *The Times* correspondent may be confusing the names of the firms for it will be noticed that he does not mention Mr. Charles Lawrance the head of the Wright Company as he almost certainly would have done if that firm had been concerned.

There will be very much interest in future in watching the development of the new American air line and the Ford Airways and in comparing them with what is done by our Imperial Airways Ltd. *The Morning Post* of May 25 notified the fact that Sir Eric Geddes had arrived at Southampton on Saturday, May 23, and that it understood that his brief visit was connected with aviation. One can only hope that Sir Eric learned something of what is being done in the States by Colonel Paul Henderson and that in consequence the future policy of Imperial Airways Ltd. may be a trifle more enlightened than it has been of late.

"Little by little" may be good enough as a policy at times but there is also a time when an intelligently progressive policy is needed.

In any case America is very obviously now at the opening of a new epoch in her aeronautical history. And knowing as one does personally most of the individuals concerned with these great developments one believes that there will be very rapid progress in that history. One only wishes that we had men of equal calibre concerned with commercial flying in this country. All these Americans are remarkable for their personal modesty and for the efficiency and effectiveness of their public work. They say little and do much. Would that our commercial aviation were run on similar lines.—C. G. G.

MORE ABOUT THE FORD AIR LINES.

The Ford Air Lines are evidently to be considered even more seriously and immediately in the development of the World's aviation than one imagined when writing the recent article on the subject.

According to Mr. Lester D. Gardner's paper, *Aviation,* of New York, which is always reliable wherever American news is concerned, the Ford organisation have engaged Major Rudolph W. Schroeder, Vice-President of the National Aeronautic Association (which corresponds in the States to our Royal Aero Club), and Mr. B. Russell Shaw, who has been for three years executive Vice-Chairman of the Contest Committee of the National Aeronautic Association. They took up their duties on May 15 with the Ford Air Lines and the Stout Metal Airplane Company, of Detroit, Major Schroeder as director of flying operations and Mr. Shaw in charge of ground organisation.

Those readers of THE AEROPLANE who read the accounts of one's visit to America last October may recall that Major Schroeder was then elected Vice-President of the National Aeronautic Association. Major Schroeder learned to fly in 1910 and served as mechanic and assistant pilot with some of the best exhibition flyers in the States. During the War he was chief test pilot at McCook Field and while there he broke two World's altitude records. In 1920 he flew one of the American machines in the last Gordon Bennett race in France. He left the U.S. Army Air Service in 1920 and became the aviation engineer to the group of underwriters who do insurance work in the States.

Thus obviously he is not only a very able pilot but also a competent engineer. And one can of one's own personal knowledge say that he is thoroughly competent to manage the flying operations of even such a big concern as the Ford Air Lines must become.

One met Mr. Russell Shaw first at Dayton where his part of the ground organisation of the Dayton Meet struck one as being quite the most successful part of the proceedings. Later one met him again at Baltimore where his organising ability was equally prominent.

According to *Aviation* Mr. Shaw began his study of aeronautics in 1908, constructed his own machine and taught himself to fly and was for two years the youngest aviator in the World. One can well believe it, for judging by Mr. Shaw's present appearance he must have been a little boy in knickerbockers at that date.

To quote *Aviation* still further, Mr. Shaw was for two years before the War with the Wright Brothers at Dayton and during the War was assistant director of flying at McCook Field. On one's own account one can say that he has a singularly engaging personality and is essentially the right man in the right place.

With two such men at the head of their flying organisation the Ford Air Lines ought to set a pace which will puzzle any rival organisation which starts at a later date to follow successfully. One esteems oneself fortunate in having already had pleasant associations with the three men who are really at the head of the Ford organisation, namely, Major Schroeder, Mr. Shaw and Mr. Bill Stout.—C. G. G.

AVIATION IN SOUTH AFRICA.

The Times correspondent in Johannesburg, in a communication dated May 20, states :—

It is pointed out here that there is little danger of any foreign Power gaining control of the Union's commercial air services, as there is a special provision in the Union Air Navigation Regulations providing against such a contingency.

The four firms which have offered to assist in aerial development in the Union are Vickers, Limited, the De Havilland Aircraft Company, Limited, the Dutch Aircraft Manufacturing Works (Fokker), and the Junkers Werke, of Dessau. Their offers are unlikely to come before the Cabinet before the end of the Parliamentary Session.

A TRANS-ATLANTIC SCHEME.

The rumours that a concern calling itself The Oceanic Airways Company intends to institute a 46-hour service between London and New York need not be treated too seriously for the present. The statement that Mr. J. G. Navarro "who was engaged in aircraft design during the War" has placed details of the scheme before Sir Sefton Brancker and that "further negotiations with Government departments are pending" does not necessarily imply approval by the officials concerned. The project is a revival of the ancient idea, put forward before the War 1914-18, of having depot ships stationed in mid-Atlantic where the flying boats which the promoters say will be employed on the service are to be re-fuelled.

The Morning Post's air expert, quoting some alleged authority on Civil Aviation, says that "there is nothing risky or even experimental in the scheme. It is simply a matter of obtaining the capital, organising the routes, and using the right type of machine." Without oneself wishing to pose either as an expert or an authority one merely expresses one's belief that many years will pass before a flying boat can be produced which can be put down on the water in an Atlantic gale with any chance of surviving for more than a few minutes. And until such a boat is produced such a service as that proposed is merely a wild-cat scheme.

Mr. Navarro was certainly employed by at least one aircraft firm during the War, and, if one remembers rightly, he formed a comparatively small concern called The Navarro Aircraft Company which built aeroplanes under license to some other design, or at any rate made component parts of aeroplanes, but one cannot recollect that any of his designs were ordered by the Government nor does one remember any product of his flying since the Armistice.

How much the experts and authorities of *The Morning Post* know about aviation may be judged by the statement that "When the proposed routes are operating they will link up with the present New York—San Francisco air line." Unfortunately there is no air line at present between New York and San Francisco. There is only the U.S. Air Mail service, which carries no passengers.

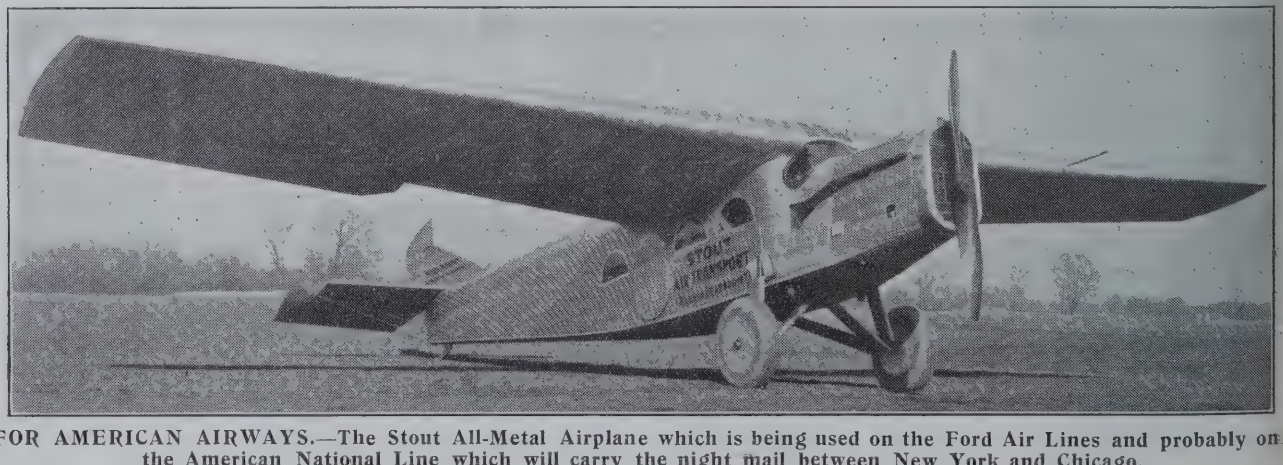
One can never work up any enthusiasm over schemes which publish un-essential details before delivering the goods. Such statements as that the engine "will be placed in an engine-room six feet wide to enable a mechanic to tend it in flight," and that "the fare from London to New York will be £125," and that "the difference in local time between ship and ship will be half-an-hour," and that "designs for flying boats carrying 60 passengers have been produced by Mr. Navarro, but at first it is probable that smaller 10-passenger machines will be employed," always strike one as being what Gilbert called "Corroborative detail intended to give an air of artistic verisimilitude to an otherwise bald and unconvincing narrative."

Even to run a trans-Atlantic line experimentally a capital of a million pounds or so would be necessary, and if Mr. Navarro happens to have found the harmless necessary millionaire one would advise him to spend his friend's money on something a good deal more promising than a trans-Atlantic flying-boat service.—C. G. G.

THE LONDON LIGHT AEROPLANE CLUB.

The recommendation of the Finance Committee of the Royal Aero Club that a separate Company should be formed to carry out the finance and management of the proposed London Light Aeroplane Club has been approved by the General Committee.

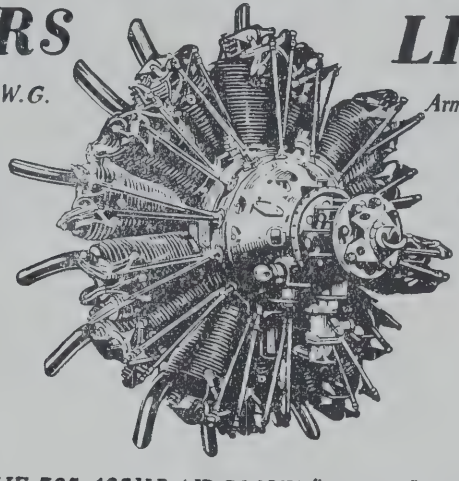
The following Committee was appointed for this purpose: Lieut.-Col. F. K. McClean, A.F.C.; Wing-Commander T. O'B. Hubbard, M.C., A.F.C.; Air-Commodore C. A. H. Longcroft, C.B., C.M.G., D.S.O., A.F.C.; Major R. H. Mayo, Lieut.-Col. A. Ogilvie, C.B.E.; Col. the Master of Sempill, and Capt. C. B. Wilson, M.C.



FOR AMERICAN AIRWAYS.—The Stout All-Metal Airplane which is being used on the Ford Air Lines and probably on the American National Line which will carry the night mail between New York and Chicago.

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Allied with Sir W. G. Armstrong Whitworth & Co Ltd.



THE 385-425 H.P. AIR COOLED "JAGUAR" ENGINE

THE "JAGUAR" Engine is the result of scientific research extending over a number of years combined with the practical experience gained in the manufacture of aircraft engines during and since the War.

In August last a "JAGUAR" Engine passed the latest type test of H.M. Air Ministry, at a rating of 385 h.p. This test included a duration run of 100 hours and is, in fact, twice as severe as the previous test. THE "JAGUAR" Engine was the first aero engine to undergo satisfactorily this test.

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CONTRACTORS TO H.M. AIR MINISTRY

G.W. 1925

THE ROYAL AIR FORCE.

The London Gazette.

May 19.

ROYAL AIR FORCE: GENERAL DUTIES BRANCH.—Flg. Off. A. R. Wardle is granted a perm. comn. in the rank stated (May 20); Lt. J. E. Hewitt, R.A.N. (lent R.N.), is granted a temp. comn. as a Flg. Off. on attachment to the R.A.F. (May 4).

The following are granted temp. comns. on seconding for four years' duty with the R.A.F. (May 12):—FLG. OFF. (HON. FLT. LT.).—Capt. D. J. Stewart (York and Lanc. R.). FLG. OFF.—Lt. F. S. S. Lamprey (Green Howards).

The following Plt. Offs. are promoted to the rank of Flg. Off.:—H. S. Dawe (Feb. 14); F. G. Jennings (Mar. 14); A. G. Moon (Mar. 14); G. H. W. Selby-Lowndes (Mar. 14); G. J. Southam (Apr. 15); A. C. Addams (Apr. 17). The seniority of Plt. Off. H. E. Nowell is antedated to Dec. 27, 1924, his name to appear on the gradation list immediately below that of Plt. Off. G. B. Beardsworth.

Sq. Ldr. A. W. H. James, M.C., is placed on the retired list at his own request, and is granted rank of Wing Cmdr. (May 21); Flg. Off. E. B. Green, M.C., is placed on the retired list at his own request (May 20).

MEDICAL BRANCH.—Flt. Lt. E. A. Lumley, M.C., M.B., is promoted to the rank of Sq. Ldr. May 19).

The following relinquish their temp. comns. on ceasing to be employed:—Flt. Lt. J. F. Gallagher (Apr. 18); Flt. Lt. (Hon. Sq. Ldr.) J. Craig, M.D. (Apr. 25).

ACCOUNTANT BRANCH.—Flg. Off. R. D. Robbins is transferred to the Reserve, Class C (Apr. 15).

CHAPLAINS' BRANCH.—The Rev. A. W. Brown is granted a perm. comn. with the relative rank of Sq. Ldr. (May 29).

RESERVE OF AIR FORCE OFFICERS.—C. A. J. Goodfellow is granted a comn. in Class A, General Duties Branch, as a Plt. Off. on probation (May 19).

The following are confirmed in rank (May 18):—Flg. Off. C. G. Bloomer, Plt. Off. R. J. Bunning, Flg. Off. J. F. Turpie is transferred from Class A to Class C (May 8); the comn. of Plt. Off. on probation H. D. Clevely is terminated on cessation of duty (Feb. 3). (Substituted for the notification in *Gazette* of Feb. 3.)

Appointments.

Week ending May 25.

GENERAL DUTIES BRANCH.—Flight Lieutenants H. J. Edgar, to No. 1 F.T.S., Netheravon, 1/6. D. K. Cameron, to No. 8 Sqdn., Iraq, 1/5. H. S. Scroggs, to No. 58 Sqdn., Worthy Down, 1/6. A. W. Symington, M.C., to Stores Depot, Iraq, 1/5. A. W. Cuddon-Davis, to No. 39 Sqdn., Spittlegate, 3/6. W. A. Duncan, to No. 6 Sqdn., Iraq, 1/5. F. Thomasson, D.F.C., M.M., to No. 70 Sqdn., Iraq, 1/5. D. Cloete, M.C., A.F.C., to C.F.S., Upavon, 25/5. A. C. Collier, to No. 24 Sqdn., Kenley, 29/5. E. P. M. Davis, A.F.C., A.M., to H.Q., Egypt, 15/5. B. D. S. Tuke, to No. 1 Group H.Q., Kidbrooke, 14/5. H. V. Pendavis, D.S.O., to No. 2 F.T.S., Digby, 18/5. H. N. Hampton, D.F.C., to H.Q., Inland Area, 18/5. J. McFarlane, M.C., to R.A.F. Base, Gosport, 18/5.

Flying Officers G. H. Russell, D.F.C., to School of Army Co-operation, Old Sarum, 18/5. C. E. B. Winch, to School of T.T. (Men), Manston, 21/5. B. A. S. Lewin, to No. 2 F.T.S., Digby, 21/5. F. V. Gauntlett, to No. 24 Sqdn., Kenley, 18/5. E. B. Forster, to I.A.A.D., Henlow, 18/5. (Hon. Flt. Lt.) D. J. Stewart and F. S. S. Lamprey, to No. 24 Sqdn., Kenley, on appointment to temporary Commissions on being seconded from the Army, 12/5. H. V. Mitchell, to H.Q., Iraq, 1/5.

Pilot Officer W. V. R. Nicholl, to Night Flying Flight, Biggin Hill, 21/5.

MEDICAL BRANCH.—Flight Lieutenant W. Parsons, to Central Medical Board, 30/5.

STORES BRANCH.—Wing Commander W. R. Bruce, O.B.E., to No. 1 Stores Depot, Kidbrooke, for Stores duties, 28/5. Squadron Leaders H. L. Crichton, M.B.E., to No. 3 Group H.Q., Spittlegate, 1/6. H. E. J. Hewitt, to No. 6 Group H.Q., Kenley, 28/5. Flight Lieutenants F. Petch, O.B.E., to Station H.Q., Spittlegate, 8/6. A. M. Saywood, to Stores Depot, Iraq, 1/5. L. A. Lavender, to I.A.A.D., Henlow, 1/6. Flying Officer W. T. Lewis, to No. 84 Sqdn., Iraq, 3/4.

ACCOUNTANT BRANCH.—Flight Lieutenant F. W. Arthurton, to No. 4 F.T.S., Egypt, 4/5. Pilot Officer A. McBroom, to H.Q., Cranwell, 18/5.

The King's Levee.

His Majesty the King held a Levée at St. James's Palace on May 25.

Among those in attendance upon His Majesty was Air Marshal Sir John Salmond, Principal Air Aide-de-Camp.

Among those who attended the Levée were the Secretary of State for Air, Air Commodore the Rev. H. D. L. Viener, and Wing Commander the Hon. M. Baring.

The following officers of the Royal Air Force were among those presented to the King by the Secretary of State for Air:—

BARKER, Wing Cmdr. W., V.C., D.S.O., M.C., Royal Canadian Air Force; BOND, Flt. Lt. A., A.F.C.; DAVIS, Flt. Lt. E.; ELMHIRST, Flt. Lt. T., A.F.C.; FULLARD, Flt. Lt. P., D.S.O., M.C., A.F.C.; BEAUFORTE-GREENWOOD, Flt. Lt. W.; HEMSLEY, Plt. Off. B.; JOLLIFFE, Flg. Off. E., all on appointment.

LAMBE, Air Vice-Marshal C., C.B., C.M.G., D.S.O., on promotion. MCNEECE, Group Capt. W., C.B.E., D.S.O., D.F.C., on promotion.

PAULL, Flg. Off. A.; PIRIE, Sq. Ldr. G., M.C., D.F.C.; PRYOR, Flt. Lt. A., all on appointment.

REES, Group Capt. L., V.C., O.B.E., M.C., A.F.C., on appointment as Air Aide-de-Camp to His Majesty.

RIDLEY, Sq. Ldr. C., D.S.O., M.C.; TIDY, Flg. Off. C.; WOMBWELL, Flt. Lt. A.; WOODHOUSE, Flt. Lt. J., D.S.O., M.C.; WORKMAN, Flt. Lt. F., M.C., all on appointment.

Post-Bellum and R.N.A.S. Medals.

The Times of May 22 states:—

The post-Armistice awards of British War and Victory medals are now available for issue to those entitled who have not received either or both medals for earlier service. The operations concerned are North Russia (1918-19), East Baltic (1918-19), Black Sea and Bosporus (1918-20), Caspian (1918-19), and mine-clearance (1918-19).

Many British war medals earned by service prior to the Armistice are still unclaimed, a large percentage relating to officers and men late of the Royal Naval Air Service, Royal Naval Reserve, Royal Naval Volunteer Reserve, and Mercantile Marine Reserve. A minimum period of 28 days' mobilised service, whether afloat or not, qualifies for the naval award to Nov. 11, 1918, claims to which, or to the post-Armistice issues of the British War and Victory medals, should in the case of officers and men not now serving be addressed to the Accountant General of the Navy, Cornwall House, Stamford Street, London, S.E.1.

The Fleet Air Arm.

The following Naval Appointments were issued by the Admiralty on May 15:—

LIEUT.-CMDR.—W. K. D. Dowding, D.S.C., to *Hermes*, on recommissioning (June 3).

LIEUTS.—M. A. Maude, I. R. Grant, J. H. F. Burroughs, and E. F. Carnduff, to *Hermes*, and for pilot duties in No. 403 Flight; E. M. C. Abel-Smith and J. Dawson Ainger, to *Argus*, and for pilot duties in No. 401 Flight; R. St. A. Malleson, C. J. N. Atkinson, and A. M. Rundle, to *Furious*, and for pilot duties in No. 404 Flight; S. Richardson, to *Hermes*, and for pilot duties in No. 441 Flight; F. M. R. Stephenson and G. R. M. Robterson, to *Furious*, and for pilot duties in No. 443 Flight (undated).

LIEUTS. (E.)—E. A. A. Gibbon, to *Hermes*, and for pilot duties in No. 441 Flight; and A. D. Morrison, to *Eagle*, and for pilot duties in No. 440 Flight (undated).

ROYAL MARINES.—CAPT.—G. E. Wildman-Lushington, to *Eagle*, and for pilot duties in No. 440 Flight (undated). LIEUTS.—H. M. A. Day, to *Hermes*, and for pilot duties in No. 403 Flight; and J. L. L. Rees, to *Furious*, and for pilot duties in No. 433 Flight (undated).

Lt.-Cdr. Dowding has just completed a course at the R.A.F. Staff College. Capt. Wildman-Lushington, R.M., has been stationed at the R.A.F. Base, Gosport. The other officers completed a six-months' course at No. 1 Flying Training School, R.A.F., Netheravon, in January of this year.

Fatal Accidents.

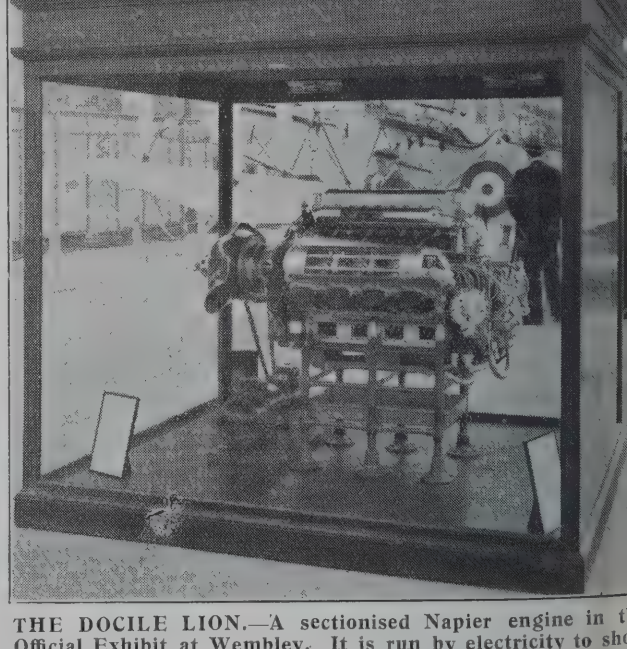
The Air Ministry regrets to announce that as a result of an accident at Sialkot, India, to a Bristol Fighter, of No. 3 Sqdn., Ambala, on May 20, Flg. Off. Arthur Findley, R.A.F., the pilot of the aircraft, and Capt. Gregory Rich, Indian Army, were killed.

The Air Ministry regrets to announce that as a result of an accident at Northolt Aerodrome to a Snipe machine, of No. 3 Sqdn., Kenley, at 9.10 p.m., on May 22, Flg. Off. Arthur Reinagle Woodyatt, the pilot of the aircraft, was killed.

Sheikh Mahmud Again.

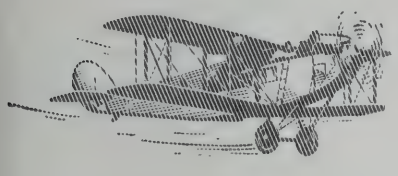
The Baghdad correspondent of *The Times*, in a communication dated May 22, states:—

For some time the fighting which has been taking place in the Suleimanie district has been intermittent owing to the difficulty of persuading Sheikh Mahmud's insurgents to accept battle. Pro-Turkish propaganda has recently induced a bolder attitude, and yesterday Sheikh Mahmud's forces made a determined attack upon a regiment



THE DOCILE LION.—A sectionised Napier engine in the Official Exhibit at Wembley. It is run by electricity to show how its inside works. As an exhibition of British workmanship it is of high value. Forty-one aeroplanes in the R.A.F. Display on June 27 will be fitted with Napier engines.

The Napier Aero Engine
will improve the performance of your machines



The Napier improves the speed of fighting Scouts.

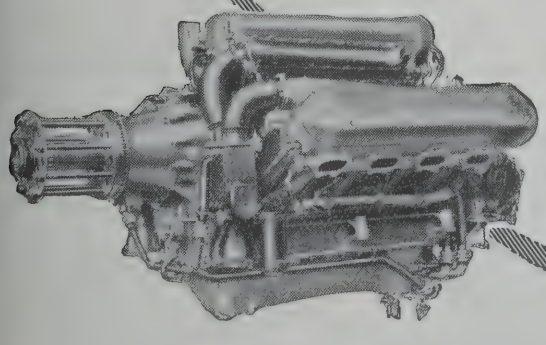
In bombers and troop carriers the Napier enables heavier loads to be carried at faster speeds.

For commercial service the Napier carries a greater paying load at less cost for maintenance.

To racing machines the Napier gives increased speed.



May we send you particulars of the Napier "Lion"—the engine of light weight, high power, absolute reliability and economy in maintenance



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A limited number of a handsomely produced Napier album, illustrating latest type aeroplanes, are available at one guinea, the published price.

Iraq Levies Cavalry which was on the march between Suleimanie and Halebja.

Full particulars have not yet been received, but it is known that heavy casualties were inflicted on the insurgents by the aircraft which were co-operating, in addition to those caused by the cavalry, who gave a good account of themselves, causing the enemy to draw off by nightfall. The casualties of the cavalary were slight in comparison with those inflicted on the insurgents.

The Times correspondent in Baghdad in a message dated May 25, states :—

Further particulars of the attack made on the second regiment of Levy Cavalry while marching from Suleimanie to Halebja show that the Kurds, excited by Turkish propaganda, began the fight by desultory sniping on May 20.

They did no damage, and retired during the night. On the following day the column was strongly attacked while passing through a valley, three-quarters of a mile broad, between high hills, which were occupied by tribesmen, who retired into caves when aeroplanes came to the assistance of the column.

While the advance guard was engaged with the enemy, a strong attack was made on the rearguard and baggage, which threw the hired civilian transport into confusion and caused it to stampede. The British column commander, however, successfully reorganised the transport and charged the enemy's positions. The enemy did not wait to receives the charges but fled. These charges were the deciding factor of the day, as the enemy were driven into the open, where they suffered heavy casualties from the aerial attack of the Sopwith Snipe biplanes of No. 1 Squadron, Royal Air Force; subsequently the Kurds were seen only on the hilltops at long range, and the cavalry drew clear of the defile without further trouble. On May 22 Halebja was reached without further opposition.

On this, the first occasion that the Levy Cavalry had been in action, it displayed great steadiness and gallantry. The aerial assistance was invaluable. The machines, which were hit repeatedly, escaped without serious damage and inflicted over 50 casualties on the enemy. The cavalry lost ten men killed and 18 wounded. There were no European casualties. The more seriously wounded have been evacuated from Halebja by aeroplane.

No. 1 (Fighter) Sqdn., R.A.F., is stationed at Hinaidi, and is under the command of Sq. Ldr. E. D. Atkinson, D.F.C., A.F.C., R.A.F.

Inter-Service Golf.

The Royal Air Force beat the Royal Navy and Royal Marines by eight matches to three, in a match played by singles and foursomes, at Stoke Poges on May 11. The results were :—

SINGLES.—R.A.F. : Sq. Ldr. C. H. Hayward (5 and 4), 1; Flt. Lt. C. R. Boumphrey (2 and 1), 1; Flt. Lt. D. Craik, 0; Air Cmdr. D. Munro (halved), 0; Flt. Lt. E. A. Fawcus (7 and 6), 1; Sq. Ldr. J. C. M. Lowe (5 and 3), 1; Sq. Ldr. C. V. Barr (5 and 3), 1; Sq. Ldr. A. J. Brown (1 hole), 1; Total 6.

R.N. and R.M. : The Rev. E. S. Ulyat, 0; Lt. H. G. Cutler, 0; Surg.-Cmdr. A. C. Rusack (6 and 5), 1; Surg.-Cmdr. T. Rivers (halved), 0; Cmdr. A. H. Field, 0; Lt.-Cmdr. H. Jackson, 0; Maj. R. A. D. Brooks, 0; Lt. R. S. Hannay, 0; Total 1.

FOURSOMES.—Hayward and Boumphrey, 0; Craik and Munro (2 and 1), 1; Fawcus and Lowe (6 and 5), 1; Barr and Brown, 0; Total 2.

Ulyat and Rusack (3 and 1), 1; Cutler and Rivers, 0; Field and Jackson, 0; Brooks and Hannay (1 hole), 1; Total 2.

Air Affairs in Parliament.

AVIATION IN NORTHERN EUROPE.

The following questions and replies were made in the House of Commons on May 20 :—

LIEUT.-COMMANDER KENWORTHY asked the Secretary of State for Air whether his attention has been drawn to the development of the German civilian air service, and to the formation of an air-service combine to cover a great part of Northern Europe under German auspices, and what steps are being taken to safeguard British flying rights in Northern Europe and the development of British aviation in this area?

SIR S. HOARE : The answer to the first two parts of the question is in the affirmative. As regard the third part, air agreements have been concluded with Holland, Denmark, Norway and Sweden, and negotiations for an agreement with Germany are in progress. As regards the fourth part, British air services regularly operate to Amsterdam, connecting with the Copenhagen-Malmo air service, and thus providing a through route from London to Scandinavia, and also to Berlin in co-operation with the Deutscher Aero Lloyd A.C., but it has not yet been possible further to develop British aviation in Northern Europe.

LIEUT.-COMMANDER KENWORTHY : I am much obliged to the right hon. Gentleman for the information. May I ask, in regard to these negotiations with the German aircraft companies—I presume that they are with the companies and not with the Government—is not part of the negotiation with regard to the granting of flying rights over German territory, and is the matter on the way to settlement?

SIR S. HOARE : Certain negotiations are with the Government and certain of them with the companies. The negotiations with the Government are inter-Allied negotiations, of which we form only a part, in connection with flying rights over Europe. The question with the companies, as apart from that with the Government, is actually now in progress, and I have no reason to think that agreement will not be reached between the British and German companies concerned.

CAPTAIN BENN : As to the negotiations with the Government, can the right hon. Gentleman say whether they involve some relaxation of the Treaty restrictions? If so, what is contemplated, and when may a result be achieved?

SIR S. HOARE : I am afraid that I cannot say when any result will be reached. We are only one party to the negotiations. The hon. and gallant Member knows that this question has been constantly under consideration for two or three years, and that no one wishes to see a satisfactory result obtained more than myself.

THOSE HANDYMEN!

In the House of Commons on May 21, REAR-ADMIRAL BEAMISH asked the Secretary of State for Air (1) whether, in view of the fact that the Admiralty is the only Department of Government which has designed and constructed airships, a naval officer was included on the court of inquiry into the circumstances attending the breaking away of R.33 from her mooring mast; and, if not, whether in view of the fact that the safety of ships at their moorings is a problem constantly in the minds of naval officers, he will request that an experienced naval officer be lent to assist in the complete elucidation of this regrettable accident.

(2) whether this Department, prior to the breaking away of the R.33, consulted the Admiralty with reference to the most suitable type of apparatus for mooring airships to masts; and, if so, whether the recommendations of the Admiralty were adopted?

SIR S. HOARE : The implication in my hon. and gallant Friend's questions that the Air Ministry has had less experience than the Admiralty in the mooring of rigid airships to masts is incorrect, as is the suggestion that the Admiralty is the only Department with experience of airship construction. On the contrary, even when the Admiralty were still responsible for the design and construction of airships, it was by the Royal Air Force that practical experiments in regard to mast mooring were conducted and the 1921 trials, which finally established the practicability of the mooring mast, were carried out entirely by the Air Ministry.

The problem is an entirely different one from that of the mooring of ships at sea. For these reasons, whilst I desire to utilise all available airship experience, whether at the Admiralty or elsewhere, there would have been no advantage in this particular case either in consulting the Admiralty before the recent accident to the R.33 or in requesting the assistance of a naval officer in elucidating its cause.

ANTI-AIRCRAFT GUNFIRE.

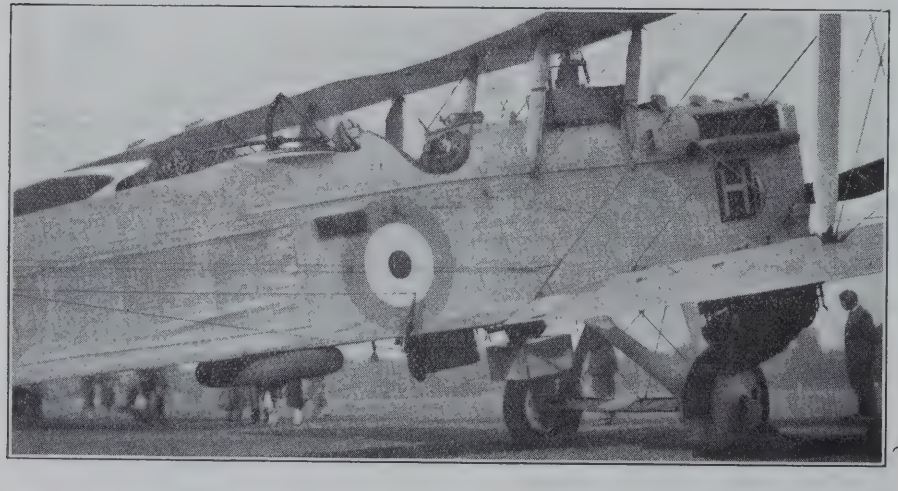
In the House of Commons on May 20th, in reply to a question by MR. THURTLE, the FINANCIAL SECRETARY TO THE WAR OFFICE said that no records were available of the number of rounds fired by anti-aircraft guns through the whole of the War. It was known that between Sept. 24, 1917, and Aug. 5, 1918, the number of rounds fired was 155,132. The number of direct hits on enemy aircraft could not be definitely recorded, but 15 aeroplanes were destroyed during the War by anti-aircraft fire, and two airships were destroyed by anti-aircraft fire alone and four by guns and aeroplanes jointly. Many other aircraft were seriously damaged though not brought down.

CAPTAIN BENN asked whether the efficiency of the anti-aircraft batteries would not be greatly increased if they were under the control of the Air Ministry and worked in co-operation with the Air Force.

The Gordon-Bennett Balloon Race.

The Royal Aero Club will be represented by three competitors in the Gordon-Bennett balloon race at Brussels, on Sunday, June 7. The entries are :—

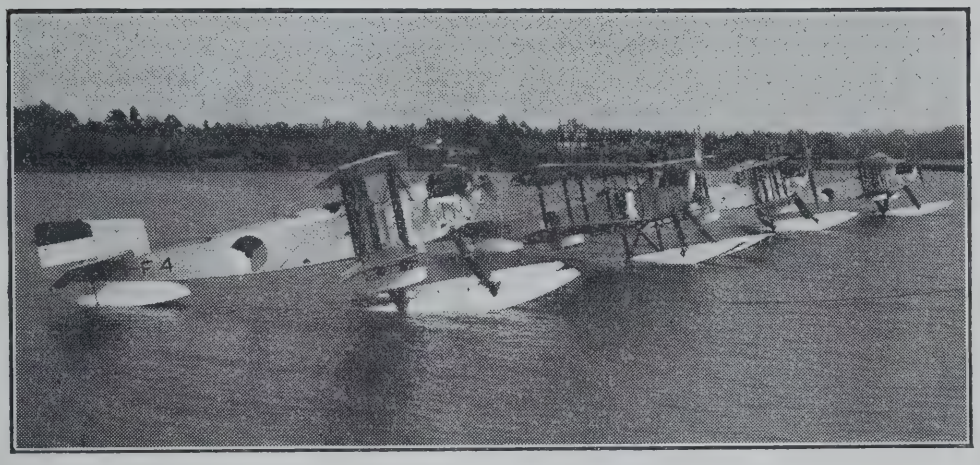
Banshee III (80,000 cubic ft.) (Mrs. John Dunville; pilot, Lt.-Col. John D. Dunville; substitute Sq. Ldr. F. W. Baldwin. Elsie (80,000 cubic ft.) (E. Allen); pilot, Capt. J. F. Johnson; substitutes Cmdr. F. L. M. Boothby, R.N., and E. Allen. Miramar (80,000 cubic ft.) (Mrs. Arthur Spencer); pilot, Capt. C. W. Spencer; substitute Capt. C. W. Berry.



"WHO'LD THESE FARDELS BEAR?"—How the performance of a D.H.9a is pulled down by decorating it with spare wheels, cameras, water-bags, ration-boxes, and other gadgets. This photograph was taken by Mr. Alan Cobham in India. There seems to be about as much fardel as machine so one might well be left bare of the other.

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FAIREY SERIES III. SEAPLANES FOR SERVICE IN DUTCH EAST INDIES.

The above photograph depicts a batch of Fairey Series III. Seaplanes which have just been supplied to the Dutch Government. It was in a machine similar to these that the Round Australia flight was made, a performance that has been awarded the Britannia Trophy for 1924. This and many other notable achievements have demonstrated the remarkable suitability of these aircraft for work in tropical climates.

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THE AIR WAR IN MOROCCO.

The Times correspondent in Tangier in a message dated May 19, states that the Riffi are making very little use of their artillery and that it is badly handled. He adds that reports of their using aeroplanes are entirely without foundation. Abdel Krim is said to own two, one captured from the Spaniards and the second acquired by purchase.

The French aviators are always active and are rendering very important services. The artillery and bombing from the air are responsible for most of the very heavy losses the Riffi have suffered.

A further message from Tangier to *The Times* states that the action of the Spanish troops on the frontier of the Tangier and Spanish zones has been causing anxiety. They seem incapable of recognising the frontier.

A communication from *The Times* correspondent in Paris on May 21 states :—

The system of French forts near the border of the Spanish zone in the Wergha region, of which the principal post is Biban (north-east of Fez), has again been the centre of active operations. A few days ago General Colombat, who commands the French column operating in this region, relieved Biban from its Riffi besiegers after some lively fighting. He then devoted his attention to clearing other parts of the region of the Riffi bands which had made their way into it.

With the help of the artillery and the military aviation units, the French troops reached their objective about 2 o'clock. The garrison of Biban had come out to meet them. After the supplies had been delivered the Colombat column returned to its starting point in the rear. The French losses are stated to have been light. The enemy left 60 killed on the ground, and it is reported that groups of tribesmen who had remained in revolt after the previous defeat on May 13 fled towards the north.

A communication from Paris dated May 24 states :—

In the fighting in the Taunat region on May 22, the French Air Force played a very active part. One squadron made 30 flights and dropped nearly 500 bombs on hostile parties and on villages of the revolted tribes. In the operations, which were carried out by two columns, the column on the right is reported to have encountered, besides revolted tribesmen, about 1,200 regular soldiers of Abdel Krim's forces. Native levies on the French side, commanded by Colonel Rozan, fought well in these actions. After clearing the Taunat plateau and strengthening the posts in the region, the French mobile columns again withdrew.

The Tangier message to *The Times* on the same date states :—

I am informed on high authority that all negotiations between the Spanish authorities and Abdel Krim have been abandoned.

The local submission of tribes, villages, or individuals will be accepted by the Spanish military authorities, but nothing in the form of a peace or a general truce will be considered. The Spanish forces will continue to punish the rebels by incursions and air raids, and there will be no cessation of daily hostilities along the Estella line.

THE HEDJAZ AIR FORCE.

It will be remembered that the Hedjaz Government, during 1924 purchased a few old D.H.9s for the purpose of forming an Air Force and that the services of three British pilots were obtained to act as instructors. The behaviour of one of these pilots, thereby putting the others to much inconvenience, and his hurried departure for Australia with most of the finance, are already too well known and too painful to recall at the moment.

However, the fate of one of the D.H.9s, an old and trusted member of the de Havilland Hire Service, is worth recounting. It appears that a Russian pilot was found who would be willing to carry out bomb raids, and as there was somebody who required bombing it was decided that they should be bombed.

Unfortunately there were no bombs, so some old shells were converted and time-fuses were attached. Presumably the mathematics of the Technical Officers of the Hedjaz Air Force were slightly out in reckoning the length of fuse necessary to allow of the aeroplane to arrive over its objective, with the result that one D.H.9 plus an unfortunate pilot descended in dust and the tiniest of fragments on supposedly friendly territory.

GENERAL MITCHELL'S FAREWELL.

An official lunch was given on April 27 in Washington in honour of Brig.-Gen. Wm. Mitchell on his departure for San Antonio, Texas, to take over the command of the 8th Corps Area. Gen. Patrick, Chief of the U.S. Air Service, was Toastmaster (whom we call Chairman). Gen. Patrick said that Gen. Mitchell had done more for the Air Service than any other individual man. They both agreed that the Air Service should be strengthened and enlarged.

Gen. Mitchell said that it had always been difficult to put through new systems of appliances to be used by the military services. It was with the greatest difficulty that the Army had been made to adopt the telephone, the telegraph, the automobile and the radio. In the Indian campaigns the savages were better armed than the American regular troops.

The coming of aircraft encountered even more opposition. The new methods and the ability to improvise and organise came largely from the civilians who were injected into aviation during the war. Most of these had returned to civil life and their place taken by officers steeped in peace-time adminstration.

Aeronautics could not be developed in that country to its full measure until a department was created solely and expressly for the purpose of furthering it. The creation of such a power would only come through the pressure of public opinion or disaster in war. The education of the people was a difficult thing for officers of the Air Service because their career and very largely their military existence hung on the Service.

Hostile surface shipping could not approach the coast of of the United States if the country were provided with an adequate Air Force. All surface craft could be destroyed by aircraft with sureness and facility. The two basic contentions that had always been advanced by armies and navies that anti-aircraft weapons are a positive defence against aircraft and that battleships cannot be destroyed by aircraft, were absolutely and positively fallacious.

Gen. Mitchell said that he thought that the development of aeronautics would lead to a better understanding between nations on account of the increased rapidity of transport, which would lead to a reduction of armaments, particularly on the seas. He thought that the air business had gone through its darkest days. Armies were in a state of arrested development, navies were in a state of diminishing national importance, but the power of the air was gradually assuming the dominating *rôle* which the future held in store for it.

THE YELLOW ALLIANCE.

The following *Reuter* message appeared in *The Times* on May 25 :—

According to the Rosta Agency, a squadron of six aeroplanes will leave Moscow on June 10 for Peking, flying over Mongolia and the Gobi Desert. Three of the machines have been constructed in Soviet workshops.



OVERSEAS TRADE.—A Bristol "Advanced Training" machine, much on the lines of the famous Bristol Fighter, with Siddeley Puma engine. This is one of a number supplied to the Greek Naval Air Service. In front of the wings are, left to right, Engineer-Lieut. Alifantis, Mr. C. F. Uwins (the Bristol chief pilot) and Lieut.-Commander Retsinopoulo.

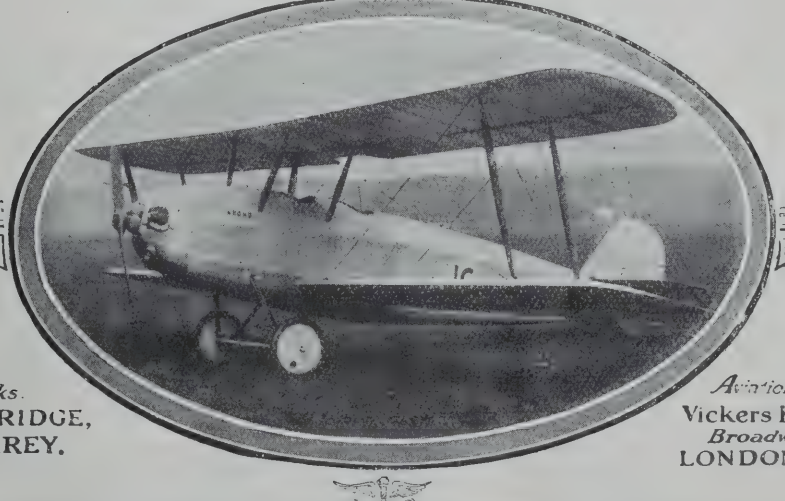
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AN ANGLO-BELGIAN ENTERTAINMENT.

On May 22 a lunch was given by the Directors of Handley Page Ltd. at the Savoy to Lieut.-Aviateur Edmond Thieffry and his mechanic M. de Bruycker, to celebrate their flight from Brussels to the Belgian Congo on a Handley Page driven by a Rolls-Royce Eagle IX central engine with a Siddeley Puma on each wing. Some 200 guests were present including representatives of all civilised powers and about 80 press-men.

Sir Samuel Hoare, Secretary of State for Air, proposing the Belgian Aviation Mission to the Congo, referred to Mr. Handley Page as a pioneer of British aviation. He said that the Belgian Government wishing to establish an air service in the Congo wisely decided on Handley Page machines with Rolls-Royce and Puma engines and M. Thieffry had proposed to fly one machine to its destination leaving the rest to go by boat. He with his pilot M. Roger and his engineer M. de Bruycker arrived with their engines in as good condition as when they started and the machine was now taking part in the regular service. [One gathers that the service is awaiting the arrival of the Belgian-built Handley Pages which are to supplement it.]

Continuing Sir Samuel congratulated MM. Thieffry, Roger and de Bruycker, and added that we British must feel satisfaction in this Anglo-Belgian alliance. Hitherto our alliance had been mainly on land and at sea but now it was in the air. [One is under the impression that the Belgian Flying Corps during the War 1914-18 was equipped almost entirely with British machines, mostly de Havillands.]

Referring to various long flights of late, such as that of General Brancker and the flight on which the Italian aviator the Marchese de Pinedo was engaged, Sir Samuel said that far behind them in distance, but of some importance, came the flight which the Secretary of State for the Colonies and he himself had made recently in the Middle East. That flight was significant not because of its distance nor because of the safety and punctuality which they expected and got from the R.A.F. but because it enabled two Ministers of State to journey to a part of the Empire, or rather to a country which was under the influence of the British Empire, in so short a time.

He said that Ministers ought to see the problems of their departments on the spot otherwise they only saw paper minutes. He added that what was true of politics was also true of business and that captains of industry ought to study their problems on the spot. [Evidently Sir Samuel has a touching faith in the courage of captains of industry. One's own experience of commercial magnates is that their courage is moral and financial rather than physical.]

Lieutenant-Aviateur Thieffry, who, incidentally, besides being a lieutenant in the Reserve of the Belgian Army is an advocate of the Court of Appeal, delivered a delightful speech in forensic French. Apologising for his imperfect knowledge of the English language which compelled him to reply in French to the toast of the crew of the *avion Marie José*, he said how happy they were to have succeeded on a machine designed in England and equipped with English engines, and said that the speech of the Secretary of State for Air gave an extremely flattering character to the congratulations they had received. He said that every Belgian recalled England's noble action in 1914 when she struggled to save Belgium from a cowardly attack.

Referring to British Colonial enterprise he said that it was particularly flattering that a representative of the British Government should propose a toast arising from the success of a Belgian Colonial enterprise and he said how happy and proud he and his colleagues were because, with the help of Handley Page, Rolls-Royce, Armstrong-Siddeley and the Belgian S.A.B.C.A. and S.A.B.E.N.A., they had brought about in peace time a successful collaboration of the two countries.

The flight had been a severe test for they had flown 8,500 kilometres in 75 flying hours spread over 53 days. They had encountered snowstorms in Europe, sandstorms in the Sahara, tornados over the Equatorial forests and dense mists and fog over the marshy regions of Africa. Five of their landings were made on unprepared ground and the machine had been forty days and forty nights without being under cover. At the finish the Rolls-Royce and Siddeley engines were giving their full number of revolutions and no change had been made in the parts of either motor, thanks to de Bruycker's ceaseless care.

He wished to congratulate the English Aircraft Industry which by its *entente cordiale* with the Belgian Aircraft Industry had furnished the instrument of success which now carried to the heart of the Belgian Congo the bountiful influence of aerial locomotion, regular, rapid and secure.

Mr. Handley Page, proposing the toast of Belgian Aviation, said that he congratulated the Belgian Government on selecting M. Thieffry because being a lawyer he was the better able to deal with the problems which presented themselves after landing, which problems were considerable in these days of the Nine Points and the Treaty of Versailles. Also as Sir Sefton Brancker would agree the leader of a great flight had to have in addition a considerable oratorical gift and the digestion of an ostrich. Continuing Mr. Handley Page recalled how the S.A.B.C.A. and S.A.B.E.N.A. had been associated with Handley Page in the London-Brussels service in 1919.

He gave the credit for all this successful alliance to M. Richard, whose great services to aviation were little known because of his excessive modesty. [Parenthetically one would like to say that one agrees heartily with Mr. Handley Page. Very few people realise how much M. Richard has done to convince the aviation authorities of practically every European nation of the high quality of British aircraft, both in design and material. M. Richard has been an Ambassador of Commerce in the fullest sense of the term, and his immense commercial ability is fully equalled by his generosity and kindness of heart.]

Referring to the conditions of the flight Mr. Handley Page drew attention to the way in which the machine had stood the heat of flying over the Equator and to the necessity for having a multiplicity of engines to assure reliability, for as he said if a machine has to make a forced landing there is a regular zoological garden waiting to deal with aviators and if the pilot prefers the placid waters of the Congo they are full of crocodiles.

The flight had also shown that it was not so difficult to maintain wooden machines in flying condition as had been argued by certain hysterical organs of the Press, especially when the wood was protected by Pinchin and Johnson Varnish. [This is a free advertisement, so far as The Aeroplane is concerned. Incidentally one would remark that The Aeroplane has never at any time quarelled with wooden aeroplanes on the grounds that they could not be maintained in flying order. As a matter of fact one has more confidence at the present day in the durability of wooden machines than one has in metal machines. We know exactly what wood will stand but we do not know precisely how aluminium alloys will endure corrosion nor do we know whether rust will eat through the rivet-holes of steel machines and allow them to fall to pieces after a period. The Aeroplane's arguments in favour of metal construction have been based solely on the fact that there is no timber available for the mass production of aircraft in case of war.]

In conclusion Mr. Handley Page said that he knew that M. Thieffry would assure the success of commercial aviation in the Congo in the future.

Mr. J. H. Thomas seconded the toast and said that if it were true that in internal relations it was essential for employers and employees to get together and to talk to each other and not at each other, how much more true was it of international affairs that men should meet face to face to know each other. Anything which would bring men and nations closer together must be to the benefit of mankind, and that was why he welcomed the opportunity of being present to congratulate the Belgian Mission on their work.

The Belgian Ambassador, in acknowledging the toast, referred to the excellent relations existing between British and Belgian aviation. They were established when their young airmen learnt to fly on British machines during the war, and had been maintained ever since.

AN ENGLISH AIR SURVEY.

The Aircraft Operating Co., Ltd., of 8, New Square, Lincoln's Inn, have had their tender accepted for the carrying out of an experimental air survey on behalf of the Ordnance Survey Department, with a view to ascertaining its applicability to the revision of the 25-inch maps of England. The decision on the part of the Ordnance Survey to test the value of aerial photography for the revision of their maps is a new departure and is a happy indication of the fact that Government departments are now recognising aerial photography for purposes of survey. It is to be hoped that other departments will follow their example, more especially in new countries where economic development is urgently required and towards which the aeroplane can contribute valuable help in many ways.

Canada has long appreciated the value of the aeroplane in opening up its vast unknown territory, both as regards transport and survey. The Report of the Commission, recently sent to East Africa, indicated how urgently economic development is required in these tropical regions, the development of which would do so much towards the solution of unemployment in the Empire by promoting trade of various kinds.

The first stage in the development of a country should be the provision of suitable maps, and by far the most rapid method of doing this is aerial survey. In the case of the revision of the Ordnance maps of England the purpose of the aerial photographs is rather different, as the scale employed is very much larger than any usually necessary in other parts of the Empire. The requirements are of a much more exacting nature than would be the case in mapping for the comparatively small scales suitable to new and undeveloped areas.

PARACHUTES.

According to the *U.S. Army Air Service News Letter*, the life of another Service pilot has been saved by the use of a parachute. Lt. Johnson was flying a P.W.8 machine from Mitchel Field to Long Island non-stop. About 25 miles west of Lockhaven he encountered local rainstorms and dense clouds.

About ten miles from Muncy he noticed that his oil pressure had dropped from 120 to 100 lbs. The country over which he was flying was mountainous and thickly wooded. He concluded that the machine would be wrecked in any case and decided to climb as high as possible and make a parachute jump. His altimeter registered 10,000 ft. and the engine was knocking badly, when he switched off and jumped. Lt. Johnson states that he landed in a wild-apple tree ten minutes later quite undamaged. The machine was completely demolished.

[This incident is particularly worthy of record. In a British Naval Air Service under such circumstances a pilot would probably be court-martialled and broke for losing his ship. In the R.A.F. he might earn an official dislike which would amount to a black mark against him for the rest of his career, even though acquitted by a Court of Inquiry. But the U.S.A. always regards matériel as being of less consequence than personnel.—C. G. G.]

AN APPOINTMENT.

Major R. H. Mayo, formerly of Ogilvie and Partners Ltd. and now of the Aircraft Operating Co. Ltd. has been appointed Consulting Engineer to Imperial Airways Ltd. The appointment in no way affects his position with the A.O.C. as his duties with Imperial Airways Ltd. are purely of a personal nature. One congratulates all parties concerned with the arrangement.

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England to Finland	1,100 miles
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England to Sweden (and back)	2,450 miles
England to South Africa	6,281 miles
England to Australia	11,500 miles

These flights were accomplished without any change of engines en route

"The Britannia Trophy, presented by the Royal Aero Club for the best performance in the year, has been awarded for the year 1924 to Wing-Commander Goble and Flight-Lieutenant McIntyre for their flight round Australia in a Rolls-Royce-Fairey."

"Daily Telegraph," March 26th, 1925

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THE PIONEERS OF SEAPLANES.



THE LATEST BUT NOT THE LAST.—Short Bros.' duralumin hull flying-boat, known as the Singapore, with two Rolls-Royce Eagle engines.

In these days when so many new people are coming into the aeronautical community, by way of the Air Force and Light Aeroplane Clubs and so forth, there seems to be reason for setting forth a little ancient history and for showing how the present supremacy of British aircraft in workmanship and constructional design rests on a sound basis of experience.

Beyond dispute the firm which has the most right to be regarded as the pioneer firm of British Aviation is Short Brothers, Ltd., of Rochester, in that the brothers were engaged in aeronautical work long before aeroplanes ever flew. Eustace and Oswald Short were in fact the official balloon-makers for the Royal Aero Club almost from the foundation of that organisation in 1901, for the partnership came into existence in 1897.

As soon as aeroplanes were first made in this country, which was actually in 1909 (the late S. F. Cody and the happily very-much-alive A. V. Roe being then engaged on experiments at Farnborough and Lea Marshes, respectively), the Short Brothers, whose balloon-factory had been situated in the railway arches under Battersea Road Station, established themselves ath Leysdown in the Isle of Sheppey, some few miles to the East of the present R.A.F. aerodrome at Eastchurch.

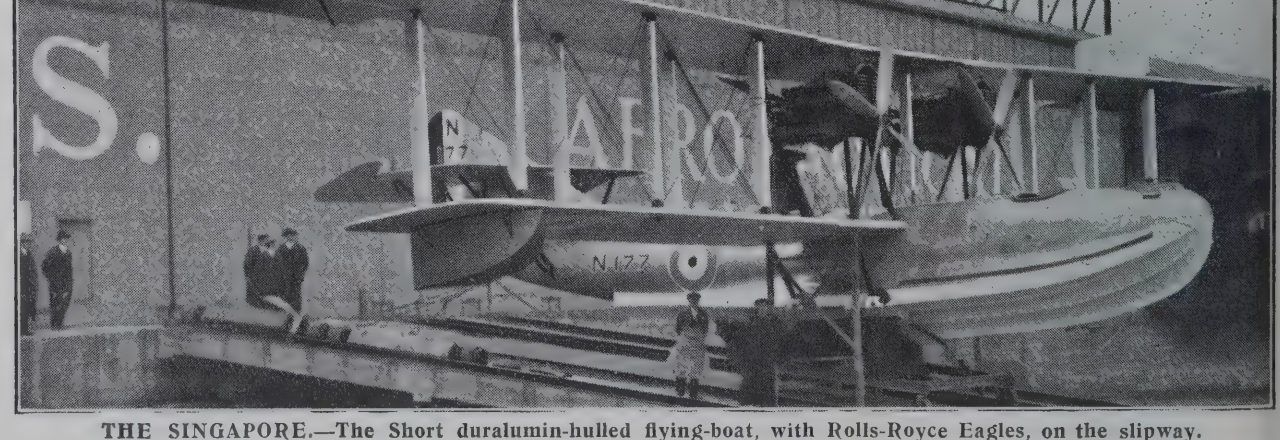
Just prior to that Horace Short. the eldest of the three brothers, who had been the right hand man of Sir Charles Parsons in his turbine work at Newcastle and had invented that wonderful instrument the Auxetophone, joined his brothers, and with his extraordinary all-round knowledge as well as his wide and deep engineering experience became promptly one of the leading lights of British Aviation. One could easily write a book about Horace Short but as a brie sketch of this kind one can only say that he was one of th most extraordinarily fascinating characters whom one ha ever met.

At Leysdown the Short Brothers, whose first clients wer Mr. F. McClean, the late Hon. C. S. Rolls, the Hon. Mauric Egerton (now Lord Egerton of Tatton), and Mr. Alec Ogilvie took over the working of the Wright patents in England an turned out several machines of the Wright Brothers' typ besides a number of experimental biplanes of their own design for Messrs. McClean and Ogilvie and also for th Brothers Grace and for Mr. J. T. C. Moore-Brabazon. It wa on one of these machines, fitted with a Green engine, tha Mr. J. T. C. Moore-Brabazon won the first *Daily Mail* Prize of £1,000, for the first mile flown in a closed circuit flown o an all-British aeroplane.

In 1910 Mr. McClean took over the large tract of lan which is now the Eastchurch Aerodrome and let it to th Aero Club at a rental of one shilling per annum.

The Short Brothers established their factory there, and i 1911 they built a number of box-kite biplanes more or less o the lines of the then all-conquering Farman. Two of thes were bought by Mr. McClean and lent to the Admiralty which kindly permitted Lieuts. Samson, Longmore an Gregory, R.N., and Lieut. Gerrard, R.M.L.I., to draw thei full pay while being taught to fly on these machines by Mr George Cockburn, also a member of the Aero Club, whic was not then Royal.

That was the beginning of all naval aviation. On Shor biplanes, during the year 1912, Lieutenants Samson, Gregor and Longmore flew off warships either at anchor in Sheer



THE SINGAPORE.—The Short duralumin-hulled flying-boat, with Rolls-Royce Eagles, on the slipway.



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Telegrams :—HAVILLAND, EDGWARE.

Telephone :—KINGSWAY 160-163.



ANOTHER PIONEER EFFORT.—The Short Stellite, the first light seaplane in the world.

ness Harbour or under way near Weymouth. Cylindrical floats were fitted to one machine so that it could alight on the water, others alighted on land near the ships. And a machine which got off the water with floats was also built in 1912.

Thus in those early days Short Brothers were responsible for the first float-seaplanes and for the first deck-flyers. Consequently, whichever way our air power over the oceans develops, Short Brothers may claim to be the pioneers of this all-important branch of aviation.

During this period also Short Brothers built some quaint but very interesting experimental machines. There was one known as the "Gnôme Sandwich," in which the pilot sat jammed in between a tractor and a pusher engine in tandem. There was one in which two Gnôme engines coupled in tandem drove a single tractor screw, this being known by the naval people as the "Double Dirty." And there was yet another in which one Gnôme engine drove a pusher screw and another drove two tractors with chain drive. This if one remembers rightly was known affectionately as the "Triple Dud." So that the Short Brothers can also claim to have built the first twin-engined machine and the first triple-screw machine.

Incidentally the demonstration in 1911 of the possibility of putting aeroplanes down on water with the help of air bags resulted in the extensive use of that principle during the War 1914-18 and it is still used for deck-flying machines.

More or less as the result of all these various experiments there appeared in 1912 the first twin-float seaplanes with the engine in front and a tractor screw, which type of machine has now become the standard type in practically all navies.

Yet another of the great achievements of the Short Brothers was the production in 1912 of the first biplane with folding wings. This was a standard float seaplane and the folding wings were introduced to facilitate storage on board ship. From it has been developed practically every type of folding wing at present in use, and the invention has greatly influenced the development of aeroplane carrying ships.

Throughout the War the Short Brothers were employed almost entirely on the production of float seaplanes but soon after the War they built the Cromarty flying boat with Rolls-Royce Condor engines which was in her day the biggest flying boat in the World which actually flew, and she flew very well indeed.

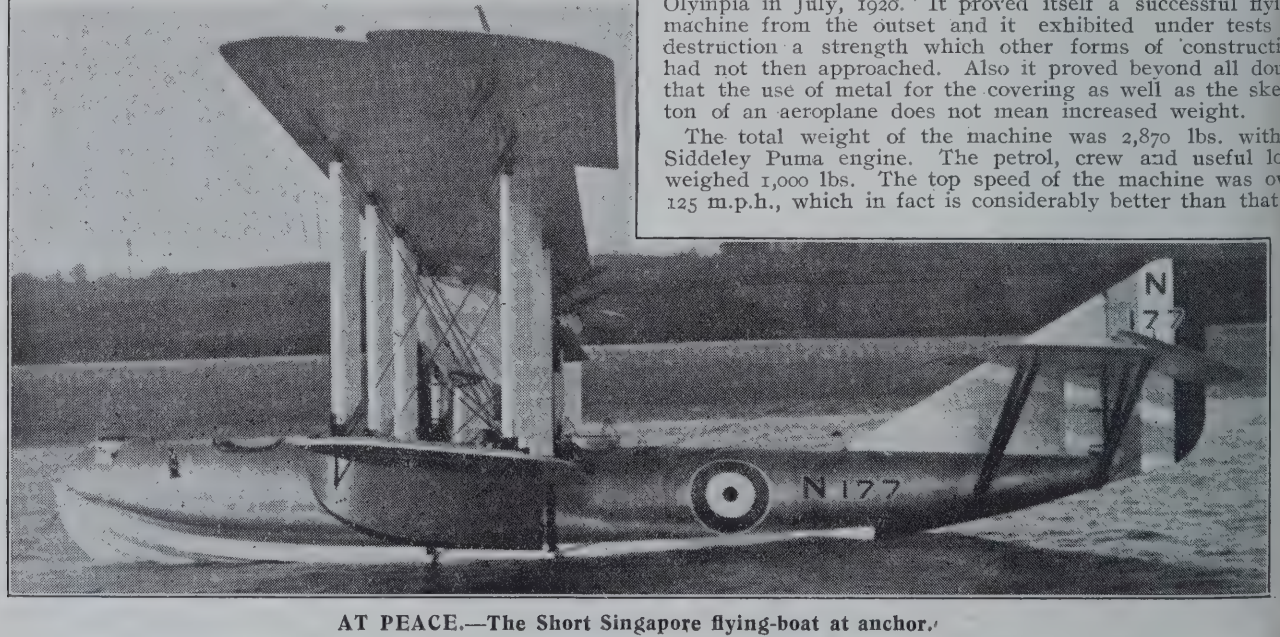
Although established for so long the history of Short Brothers' productions since 1918 show that the firm has not in any way become old-fashioned with the lapse of time, for their present-day work is marked with the same originality of thought boldly carried into execution. One of the firm's first ventures after the War was the building of the Short *Silver Streak*, which still remains the only British aeroplane built entirely, wing covering and all, of metal.

In following this branch of aircraft development the firm had to contend with the strong opposition which always faces pioneers of a new movement. And one can state without fear of contradiction that the acceptance by the Air Ministry of duralumin as material for the construction of heavier-than-air craft is due to the successful work of Short Brothers in the application of this metal.

In accomplishing this revolution the firm had to take considerable financial risk for the original *Silver Streak* was built entirely on their own initiative and at their own expense. And before building it expensive experiments had to be made to prove the efficacy of their particular method of construction. For this method differs entirely from that employed by foreign constructors of all-metal aircraft, and is the subject of several patents.

The *Silver Streak* was exhibited at the Aero Show at Olympia in July, 1920. It proved itself a successful flying machine from the outset and it exhibited under tests to destruction a strength which other forms of construction had not then approached. Also it proved beyond all doubt that the use of metal for the covering as well as the skeleton of an aeroplane does not mean increased weight.

The total weight of the machine was 2,870 lbs. with a Siddeley Puma engine. The petrol, crew and useful load weighed 1,000 lbs. The top speed of the machine was over 125 m.p.h., which in fact is considerably better than that of



AT PEACE.—The Short Singapore flying-boat at anchor.

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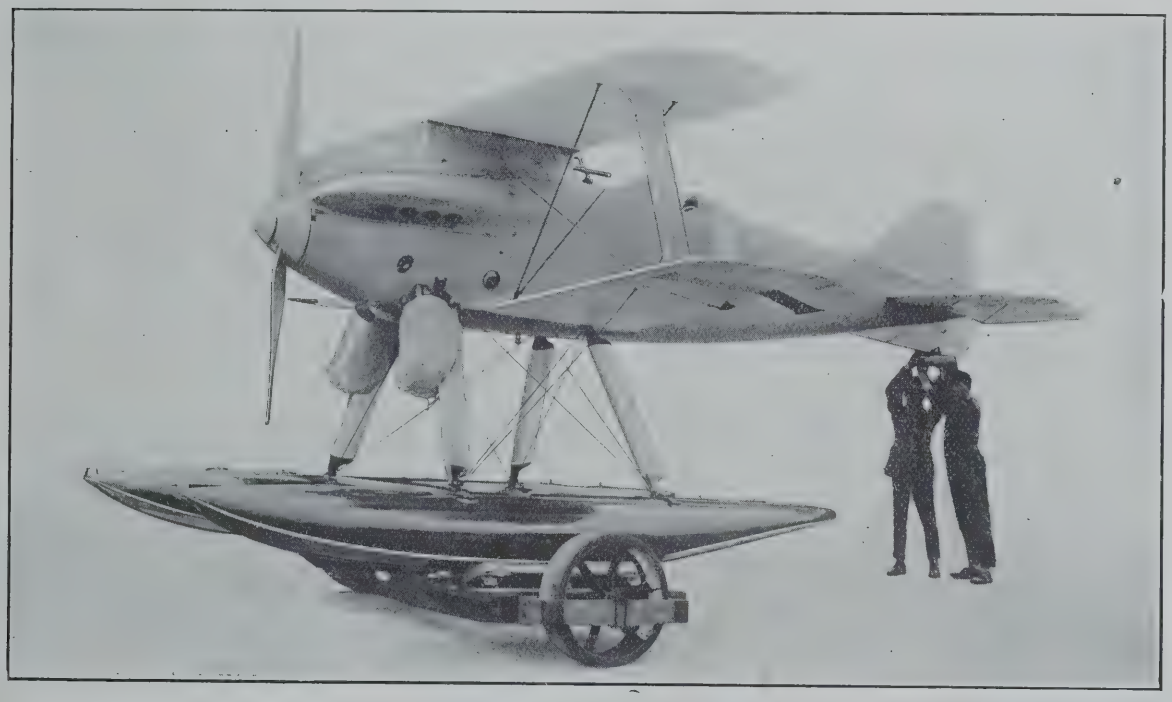
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(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.



most of the R.A.F. machines to-day. It may be added that this machine is still in existence and shows no signs of deterioration.

This machine was followed by the building of two all-metal fighting and reconnaissance biplanes fitted with Bristol Jupiter engines. They also were purely an adventure on the part of the firm, though towards the latter stage of their construction they were purchased by the Air Ministry. The performance of the first two has led to further orders of the same type on which orders the firm is still at work.

The third type of all-metal machine to be built by Short Brothers was a small flying-boat to the order of Mr. Lebbaeus Hordern, of Melbourne, but it has since been purchased by the Air Ministry. In many ways this is a remarkable machine in that not only is it the smallest flying boat yet built but it is a twin-engined flying boat having two Blackburn motor cycle engines of 700 c.c. capacity developing a maximum horse-power of 16 h.p. each.

The loading of the machine is 36 lbs. per h.p., the top speed approximately 70 m.p.h. and the climb 200 feet per minute. There is interest in noting that the aerofoil section used is one developed in the firm's own experimental laboratory. The airscrews, being coupled direct to the engines, look absurdly small and undoubtedly are not so efficient as larger screws would be so that actually the machine as a whole must be capable of doing even better than the very creditable performance that it has at present. Allowing for airscrew inefficiency the machine must in fact be flying with a loading of over 45 lbs. per h.p.

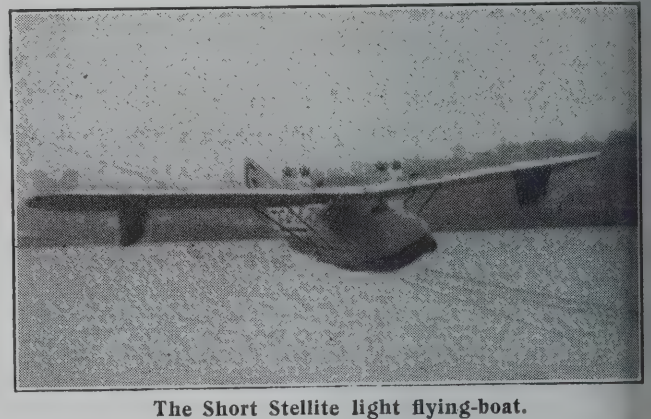
The latest triumph of Short Brothers in all-metal construction is the production to the order of the Air Ministry of a metal-hulled F.5 flying boat. This machine is illustrated herewith. It was completed in December, 1924, and has since been under tests which have proved very successful. The wing structure, tail plane and so forth are reconditioned parts of standard F.5 wooden construction, but the hull is of completely new design.

In building this hull no attempt has been made to take full advantage of the lightness of structure which the Short system gives. The hull has been built purposely to give extra strength, the main plating being nearly one-eighth of an inch thick. Consequently the hull is very much stronger than the usual wooden hulls. But in spite of this the weight by actual test has proved to be no heavier than a standard F.5 wooden hull in its original dry state before becoming water-logged. When the soakage of wooden hulls is taken into account a saving of 400 lbs. in weight under service conditions may be expected.

In accordance with the Short Brothers' method of construction the plating of this hull is made up entirely of flat sheets of metal without any beaten work in any part of it, except the small cap which finishes off the bow of the hull. The under surface of the hull is formed with a series of concave channels. These were shown in photographs recently published. This method of construction gives great rigidity to the under-water plating and does away with the necessity of much of the internal stiffening which would otherwise be required.

Under test it has been found that this method of construction prevents "panting" of the under-water plating and so prevents reciprocating stresses in the metal. Moreover it apparently improves the water-planing efficiency of the hull as this boat has proved itself to have a lower "hump" resistance on the water than any form of hull so far tested.

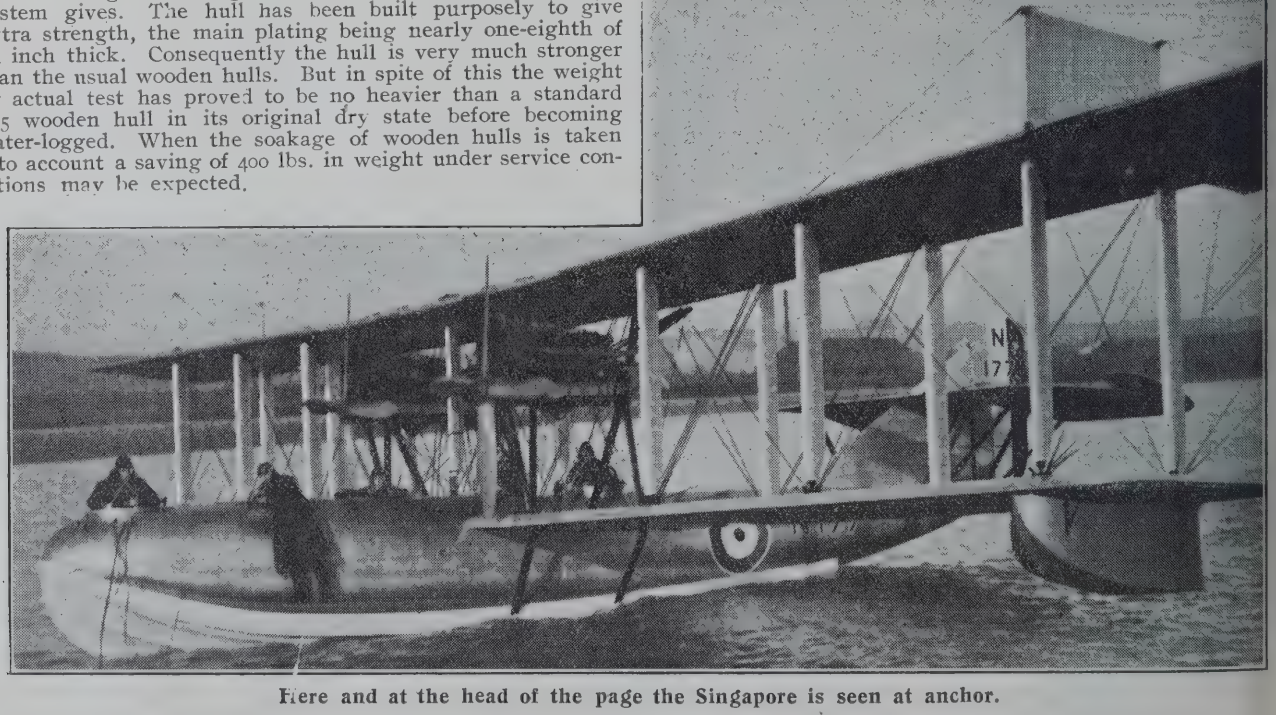
For many years past the possibility of making an all-metal hull for flying boats has been the subject of discussion in the sea-going branch of the R.A.F. and it is the more satisfactory



The Short Stellite light flying-boat.

to find that Short Brothers, having furnished the Navy with its very first seaplanes, should transfer words into deeds by designing and building the first machines in which this condition is fulfilled.

Personally one is rather fond of the motto "To have been first merely proves antiquity; to have become first proves merit." But there is still more satisfaction in such a claim as may be made by Short Brothers that having been first in the particular branch of aeronautics which they made peculiarly their own they should have continued to hold a first place in the latest developments of sea flying.—C. G. G.



Here and at the head of the page the Singapore is seen at anchor.



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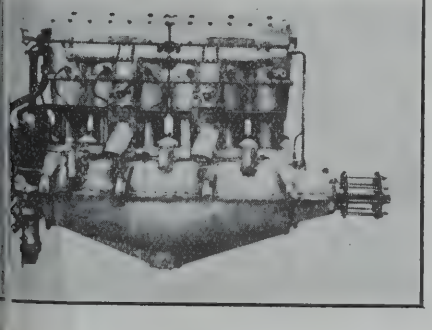
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The "PUMA" and "EAGLE" engines were giving full revolutions at the end of their journey, and practically no changes were made in any of the detail parts of either engine.

This flight has added further proof of the reliability of "PUMA" engines, and has justified the choice of these engines which supplied the bulk of power required.

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AIRSCREWS AND GEARS.—(*Concluded.*)

Fig. 5 perhaps makes the position even more clear. The curve marked "flying resistance" is the power curve for the aeroplane translated into thrust, regarded in lbs. A dashed-line curve, running from the lower left-hand corner to meet the first curve, represents the resistance of the aeroplane during its run to get-off. The line with crosses (actual airscrew thrust) shows the thrust given by the 12-foot airscrew at full throttle, whereas the dash-and-dot curve, which soars up towards the left top of the figure, shows the thrust equivalent to the 338 h.p. which is needed to give the designed top speed of 120 m.p.h. It should be noted that from standstill up to 60 m.p.h. the actual thrust is nearly constant, and is but a very small proportion of the thrust equivalent to the engine h.p. Obviously this means that the acceleration of the machine during the get-off run is much less, and the run to get off is much longer than it would be were the whole engine output usefully applied as thrust.

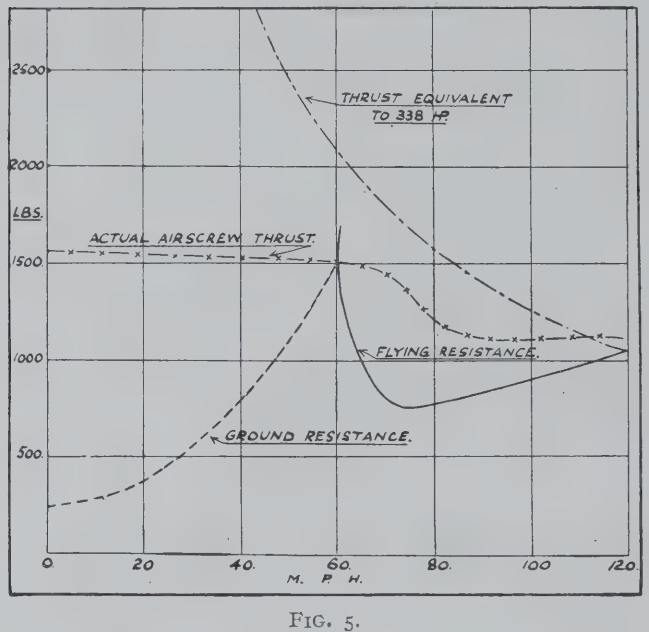


FIG. 5.

In the case of seaplanes the resistance curve during getting-off is of quite a different shape. At a speed just below that of getting on to the step, the float resistance rises to a very high value. This float resistance at the "hump speed," together with the air resistance of the machine, may quite largely exceed the machine resistance at getting-off speed. If this were the case with this machine, the airscrew considered would never get the machine off the water at all, for it would cease to accelerate before getting on to its step. And therefore the designer would choose an airscrew with a lower pitch-diameter ratio, giving a better efficiency and thrust at low speeds in order to get over the hump speed—and would sacrifice efficiency at top speed.

Fig. 6 shows the way in which the airscrew pulls down the engine r.p.m. and horse power at low airspeeds. The power available falls off some 28 h.p. between 120 and 60 m.p.h., and then by another 5 or 6 h.p. between 60 and 0 m.p.h., so that the reduction in available power at low speeds is not entirely due to the reduced efficiency of the airscrew, but in some part is caused by the overloading of the engine. The airscrew efficiency, however, has fallen from 79 per cent. at 120 m.p.h. to 55 per cent. at 60 m.p.h., and it is this which accounts for the major part of the effect.

To improve this state of affairs it is obvious that an airscrew giving a better efficiency at low speeds is required, and Fig. 3 showed that this can only be achieved by fitting an airscrew with a pitch-diameter ratio which more nearly suits the value of V/ND.

For the fixed engine gear however one cannot get very much in this way. If one keeps the original 12-ft. diameter and decreases the pitch ratio greatly, the torque absorbed for a given blade area decreases nearly in proportion to pitch. Therefore one must either increase the blade width, or increase the diameter. The one leads to a drop in efficiency and the other to an increase in ND, that is in a reduction of V/ND and of the efficiency which can be attained. By putting up the diameter to about 12 ft. 6 in. and reducing the pitch ratio to 0.7 one could allow the engine to develop full power at 75 m.p.h., and would get about 64 per cent. efficiency, or about 288 thrust h.p. That is practically the same efficiency as obtained by the original airscrew, at the same speed, and the whole gain in thrust, amounting to about 20 h.p., will be due to the fact that the engine now develops full power instead of only 420 h.p.

But at 120 m.p.h. and 1,200 r.p.m. this airscrew would only absorb about 330 h.p. with an efficiency of about 70 per cent.—giving 230 thrust h.p.

In other words, one could not reach 110 m.p.h. in level flight without exceeding the engine's permitted revolutions. One would get some 110 ft. per minute increased climb at the expense of 10 to 12 m.p.h. drop in top speed, and an inefficient airscrew at high and cruising speeds. For the majority of purposes this would be an unprofitable exchange.

A little may be done by using a variable-pitch airscrew. But if one reduces pitch at climbing speeds, the torque absorbed for a given speed falls, and the engine speeds up, and will reach its maximum permissible r.p.m. long before the pitch has been reduced to a reasonable approximation to the machine's advance per revolution. In fact it will usually be found that the value of V/ND and of the efficiency which can be obtained at climbing speed by reducing pitch is less than that obtained if the pitch is left at its high-speed value, and all that is gained is extra power obtained by allowing the engine to speed up.

What is really necessary to get the best possible result at all speeds is a combination of a propeller of variable pitch and variable diameter, together with a variable engine gearing. Even so the range of diameter and engine gear required would be very large. To get the same value of V/ND and the same efficiency at 60 as at 120 m.p.h. it would be necessary to double the diameter and to halve the airscrew r.p.m. at the lower speed. Any attempt to satisfy these requirements at present is out of the question.

The variable-pitch airscrew, as has been said, offers a little assistance—mainly by permitting the engine to maintain or even to increase its power at low air speeds. Although it would be preferable to improve the efficiency at low speeds, efficiency is of less practical importance for getting-off and climbing than is the provision of the maximum possible amount of power. An aeroplane does not usually spend any large proportion of its time getting-off and climbing, and if it is possible to improve the get-off and climb by using an increased amount of power, even inefficiently, during the short period in which this is necessary, the effect on the overall efficiency of the aeroplane is not very serious. The variable-pitch airscrew is therefore a legitimate palliative for the bad habits of the fixed airscrew at low speeds.

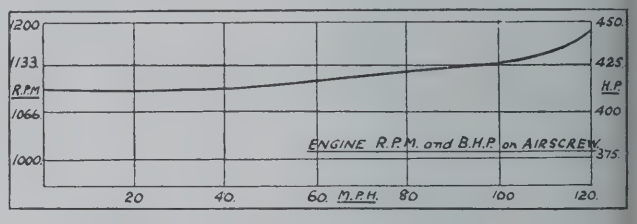


FIG. 6.

The two-speed engine gear is another palliative which is capable of producing a similar result. Going back to Fig. 6 it will be seen that with the original 12-ft. diameter airscrew the engine has fallen from 1,190 r.p.m. and 445 h.p. at 120 m.p.h., to 1,115 r.p.m. and 418 h.p. at 75 m.p.h. If there is between engine and screw a variable gear such that the ratio between crankshaft and airscrew shaft can be reduced, the engine will speed up, and if it is allowed to speed up, till it develops its full 450 h.p. the airscrew will also speed up, until it absorbs 450 h.p.—less any losses in the gearing. For small changes in r.p.m. at constant airspeed V/ND, and consequently the efficiency, change very little, and the h.p. absorbed by the screw varies as the cube of the r.p.m. Therefore to increase the power absorbed to 450 h.p., the airscrew r.p.m. must increase as the cube root of $\frac{450}{418}$ or $\sqrt[3]{1.075}$, that is as about 1.025 to 1, or to about 1,145 r.p.m. The engine speed has to increase from 1,115 to 1,200. The new gear ratio must be to the original therefore as $\frac{1200}{1145}$, say 1.05 to 1. The efficiency of the screw at this speed is about 64 per cent. so that the 32 extra h.p. developed by the engine gives an extra 20 h.p, which represents an extra 110 ft. per minute climb—or about the same result as obtained by the lower-pitch airscrew. If it is permissible to increase the engine r.p.m. for a few minutes to a higher speed than 1,200, the change in ratio would increase. If 1,300 r.p.m. were permitted and the engine torque remained constant, giving 488 h.p.

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at this speed, the screw would absorb the increased power at $\sqrt{\frac{488}{418}} \times 1{,}115$ r.pm. = or 1,175 r.p.m. The gear ratio would then be $\frac{1300}{1175}$ = about 1.1 to 1, and some 40 extra thrust h.p. would be available at 75 m.p.h.—giving a total climb of 940 ft. per minute instead of 720.

The change in gear ratio required is therefore very small, but it is important that it shall suit the characteristics of the machine and airscrew for which it is intended. With machines having an abnormally high top speed, and a big speed range, larger changes of gear will be required to give the maximum effect. With a 180 m.p.h. machine and the same engine an airscrew of about 11 ft. diameter and a pitch diameter ratio of 1.5 would give an efficiency of well over 80 per cent. at top speed. At 75 m.p.h. the engine would drop to about 1,060 r.p.m. and 397 h.p. and the airscrew efficiency to about 60 per cent., giving only 240 h.p. available as thrust. To get the full 450 h.p. from the engine the airscrew speed must rise to about 1,100 r.p.m., and the gear ratio becomes $\frac{1200}{1100}$ or 1.1 to 1. The gain in available h.p. in this case would be 60 per cent. of 53 h.p., or, say, 32. Obviously the same process of permitting a temporary excess speed could be followed in this case also. But it should be noted that the change in gear which gives full normal r.p.m. at 75 m.p.h. in the fast machine permits 100 r.p.m. excess speed for the slower machine, and therefore a low-speed ratio giving the maximum permissible engine speed in a fast machine may give an excessive rise in speed on a slow one, and, alternatively, a ratio which gives a useful increase in power at low speeds in the slow machine may be of relatively little use on one of much higher maximum speed.

Therefore, although the change in gear ratio which is required is not a large one, it is necessary to fit that change accurately to the airscrew and machine characteristics in each case. At the same time the variable engine gear has distinctly useful qualities and quite a number of advantages over those offered by the variable-pitch airscrew, but it will be of very little value unless the ratio is carefully chosen to suit the particular case.

Here it must be emphasised that the figures which have been used above are to be taken merely as examples of the general run of the phenomena in question, and not as figures which can be used, say, for design purposes. The airscrew characteristics on which the figures are based are adapted from the results of model tests, by methods of approximation which are sufficient for illustrative purposes, but which would not be satisfactory for designing purposes, and by no means represent the only possible solutions of the airscrew problems involved.

So far as concerns the increase in available power at low speeds which can be obtained by variable gearing without exceeding the permitted engine revolutions, the figures given are approximately correct. Again, if 20 to 40 h.p. on a machine with a 450 h.p. engine does not sound a great deal, 100 to 200 ft. per minute in added climb gives a better idea of the real value, but the effect on the get-off of a heavily-loaded machine is perhaps equally important. In the 120 m.p.h. machine considered the gear which gave 20 extra h.p. at 75 m.p.h. would increase the getting-off thrust by 120 to 140 lbs., or by 8 to 9 per cent. This would practically wash out the effect of the 1 in 40 gradient which was discussed in the article on "Ground Conditions and Getting-off Problems" in a recent issue of this paper. In the case of seaplanes generally the maximum load which can be carried is governed by the possibility of getting over the "hump speed" already mentioned. Eight per cent. increase in the thrust would increase the loaded weight, which could be taken off by about 4 per cent. Four per cent. of 6,000 lbs. is 240 lbs., or the weight of two hours' fuel for 450 h.p. The gear giving 40 extra h.p. therefore may increase the full power fuel range of a seaplane by four hours or so—representing something like 500 miles added radius for the same useful load—which is a gain of some real value.

And it has to be remembered that as aeroplanes grow more and more efficient, the problem of airscrew efficiency at low air speeds will become more and more acute. The machine which was taken as an example in this note was a representative specimen of the present standard type of biplane with a best L/D of 8, and an L/D of a little under 6 at 120 m.p.h. If a machine having an L/D of 12 at 75 m.p.h. and 8 at 120 m.p.h., were to be taken instead, as an example, the total weight which could be flown at 120 m.p.h. by the 450 h.p. engine would be increased from 6,000 lbs. to 8,000 lbs. The power required for flight at 75 m.p.h. would be reduced from 150 h.p. to 133 h.p., and with the original 12-ft. diameter there would be an excess h.p. for climbing, of 137 h.p. instead of 120 h.p. But owing to the increased weight the climb would fall to 570 ft. per minute instead of the 660 ft. per minute of the original machine. And as the same thrust would now have to accelerate 8,000 lbs. instead of 6,000 lbs. to 60 m.p.h. to get-off, the run, and the time taken to leave the ground, would be considerably increased. Unless, therefore, some expedient such as that of variable gearing used to increase the output of the airscrew and engine at low speeds is adopted, any improvement which can be made in the efficiency of aeroplanes will be discounted by the fact that airscrews will have to be chosen more and more with an eye to their performance at low air speeds, which will involve a sacrifice in the efficiency at higher speeds, where efficiency has the greatest effect on cost of operation.

A New French Constructor?

A list of experimental orders for aircraft, issued during 1924-25 by the French *Section Technique* and recently published in this paper, revealed that certain of these had been received by "Villiers." It has not been possible to trace this firm further, but recently a description of a Villiers machine has appeared in one of the French journals.

The machine in question is a marine fighter with a watertight fuselage, to permit of alighting on the water.

The wings are of the sesquiplan arrangement, the wing section being Göttingen 436, slightly modified. Small wing-tip floats are fitted under the bottom planes, and the undercarriage is dropable.

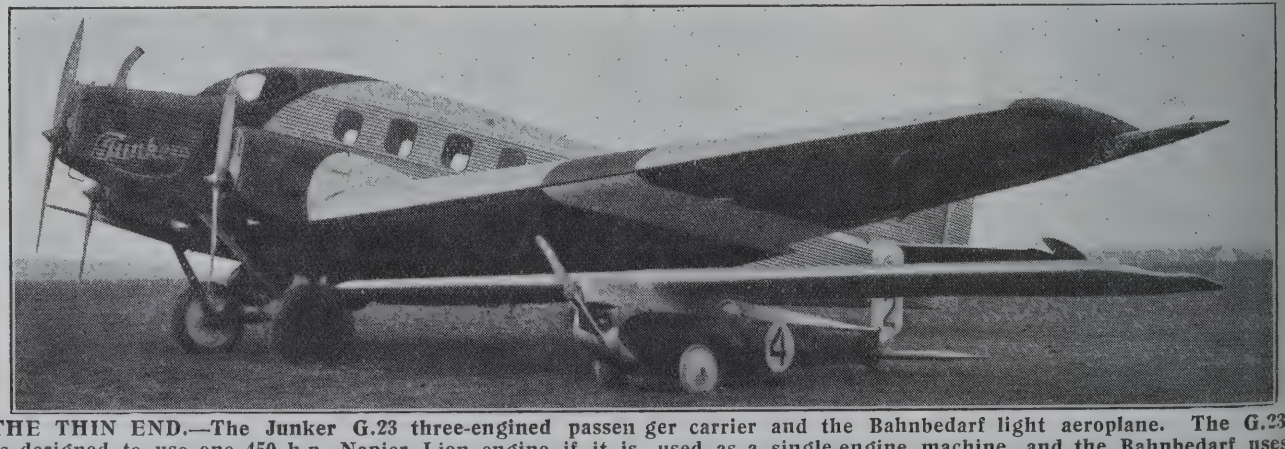
Armament consists of two fixed guns firing through the airscrew, and two Lewis guns mounted on a movable ring over the observer's cockpit.

The engine is a 450 h.p. Hispano-Suiza.

The machine has undergone official tests by the French Navy at San Raphael and the performances hereafter given are based on those tests.

SPECIFICATION.

Span 13 m. (42 ft. 8 in.)	Speed, max. ... 214 km.p.h. (130 m.p.h.)
Length ... 9.5 m. (31 ft. 2 in.)	Speed at 5,000 m. (16,000 ft.) 200 km.p.h. (124 m.p.h.)
Height 3.76 m. (12 ft. 7 in.)	Speed, min. 80 km.p.h. (50 m.p.h.)
Surface ... 40 m². (430 sq ft.)	Ceiling ... 8,000 m. (26,000 ft.)
Weight loaded ... 1,900 kgs. (4,188 lbs.)	Climb to 6,000 m. (19,680 ft.) 28 mins.
Useful load 350 kgs. (771 lbs.)	



THE THIN END.—The Junker G.23 three-engined passen ger carrier and the Bahnbedarf light aeroplane. The G.23 is designed to use one 450 h.p. Napier Lion engine if it is used as a single-engine machine, and the Bahnbedarf uses a Blackburne Tom-Tit. Permission to build this big machine i n Germany seems to be at last the thin end of the wedge of the re-opening of German Aviation.


LEONARD BRIDGMAN 1924
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29-30, CHARING CROSS, LONDON, S.W.1.

Civil Aviation in Canada.

In a comprehensive report on Civil Aviation in 1924, issued by the Department of National Defence, Dominion of Canada, it is stated that while in practically every other country the main effort of progress has been towards the development of aircraft for transportation purposes, in Canada flying has been used principally as an improved method of observation. Straight transportation work has been subsidiary to this and has been undertaken only when other modern facilities were lacking.

Aviation in Canada has flown naturally along the useful channels which were open to it after the Armistice. The pressing needs of forestry and surveying have provided its main outlets. In addition to these two services the Dominion Government has established air service stations for special patrols for fisheries protection, Customs services and other miscellaneous uses. The principal obstacle to the extension of forest-fire protection by aircraft is the high cost of flying. At the same time, after four years' trial of the use of aircraft in the works under varying conditions, and in different parts of the Province, the Provincial Government of Ontario have decided to establish their own flying service as part of their Forestry branch.

Another feature of 1924 in Canada has been the marked advance in the practical application of aerial photography to surveying, exploration and map production. An area of 40,000 square miles has been covered during the year by oblique and vertical pictures for the Topographical Survey Branch of the Department of Interior.

Previous to the amalgamation, in January, 1923, of the Air Board with the Departments of Defence, all civil flying operations for the Government were carried out by a special Civil Branch of the Air Board. Since the re-organisation the work has been carried out by the personnel of the Royal Canadian Air Force. Flying is done on a repayment or part-repayment basis.

Civil operations are considered an asset to the Service as, apart from the value in training in flying under varied conditions, the work is thought to strengthen the initiative and resource of officers and men better than a programme of routine training could do.

The Report under review gives a complete and detailed record of the progress of Canadian Aviation in 1924, with excellently-produced maps and photographs.

Our Foreign Trade.

The following letter deserves attention. Though it calls for no comment it is a valuable expression of opinion :—

Sir,—I observe that you are not lulled into a false sense of security by the answers given to Parliamentary questions on Air matters.

In your issue of Apr. 1, under the heading of "Air Affairs in Parliament," you report answers to recent questions, asked with a view to ascertaining as to what the Government have done to assist the development of British Aviation abroad. Your brief and rightly sceptical comment shows that you are not satisfied with the inevitable cry of "all's well."

The effect of the official policy followed is such as to discourage foreign countries from purchasing British Air materia. The foreigner is regarded with suspicion, none too well hidden, and treated as an inquisitive interloper. He has learnt to expect little assistance and the barest minimum of attention from those distributing Government hospitality. If he is lucky enough to be taken to visit an Air Station, it is generally closed down so far as anything interesting is concerned and he is permitted to have distant views of Avros and Bristol Fighters.

Since 1919 opportunities of training and/or equipping the Air Forces of certain foreign countries have been offered to us, and more would have been offered with a little official encouragement. To-day we see that most of these one time opportunities have been snapped up by other countries more alive than we are.

There are many advantages to be gained economically and politically and it is surely no exaggeration to say that had an enlightened policy been followed the use of British Aircraft would have been nearly universal, at least in those countries that have formed Air Services in the last six years; in South America, the Near East and the Far East.

Surely a great deal of official support is merited and should and can be given, without in any sense giving away secrets.

(Signed) W. Sempill.

[The question, answer and comment to which Colonel The Master of Sempill refers were as follows :—

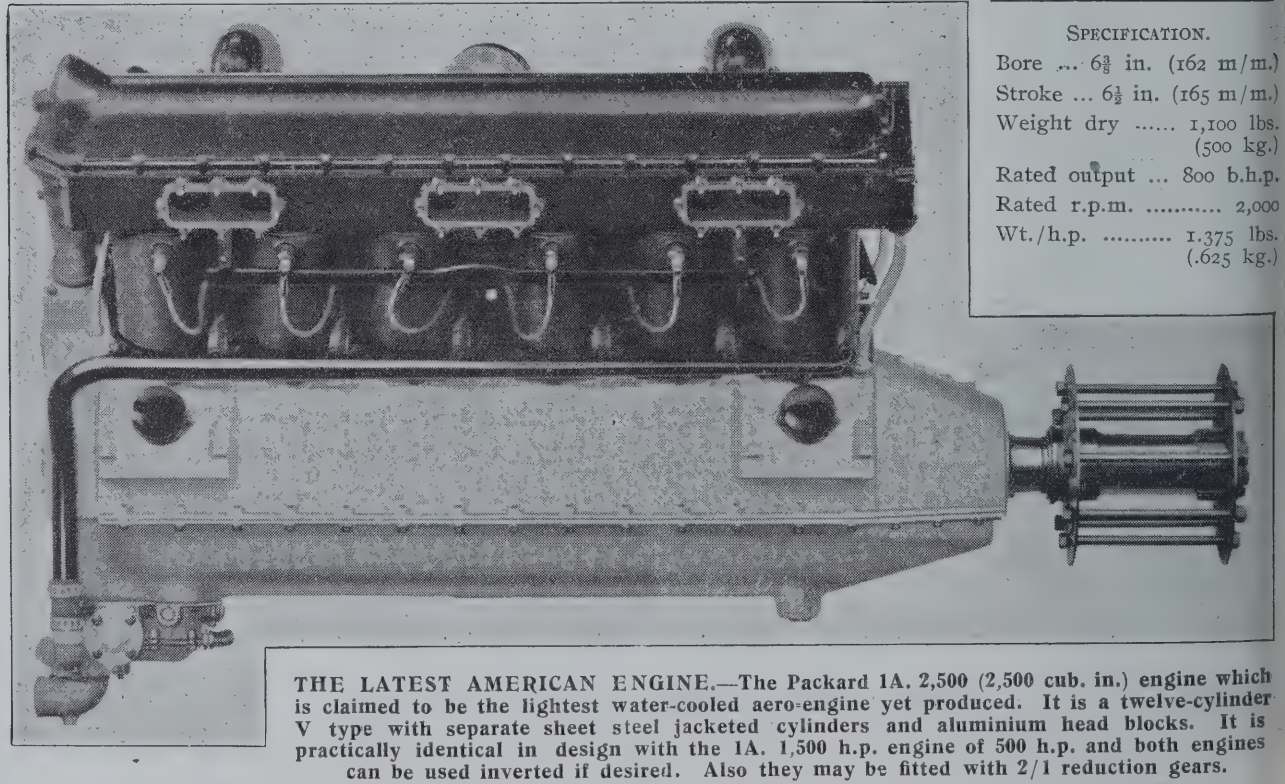
In the House of Commons on Mar. 25, in reply to a question by Lieut.-Col. Heneage, the Under-Secretary of State for Air said that the resources of the R.A.F. were available for the training of foreign officers as far as Service requirements permitted and it was the policy of the Air Ministry to encourage the attachment of such officers in suitable cases. Col. Heneage said that in countries whence foreign pilots were encouraged to come a great deal of trade results. Sir P. Sassoon agreed and said that was one of the reasons why we encouraged foreign pilots to come. [But do we?—Ed.]]

Engineers' Tools.

A most comprehensive catalogue of engineers' tools, covering 485 large pages and strongly bound has arrived in this office from T. C. Jones & Co., Ltd., the tool merchants of Shepherd's Bush, W.12. The catalogue includes what would appear to be every possible hand and machine tool and every species of woodworking tool and machinery which could be required by an engineering firm. The catalogue also includes all transmission appliances such as shafting, pulleys, belting and so forth.

In spite of this T. C. Jones & Co., in a covering letter, say that the list, though fairly representative of the requirements of general engineers, gives but a small idea of their stock and the variety of tools which they supply.

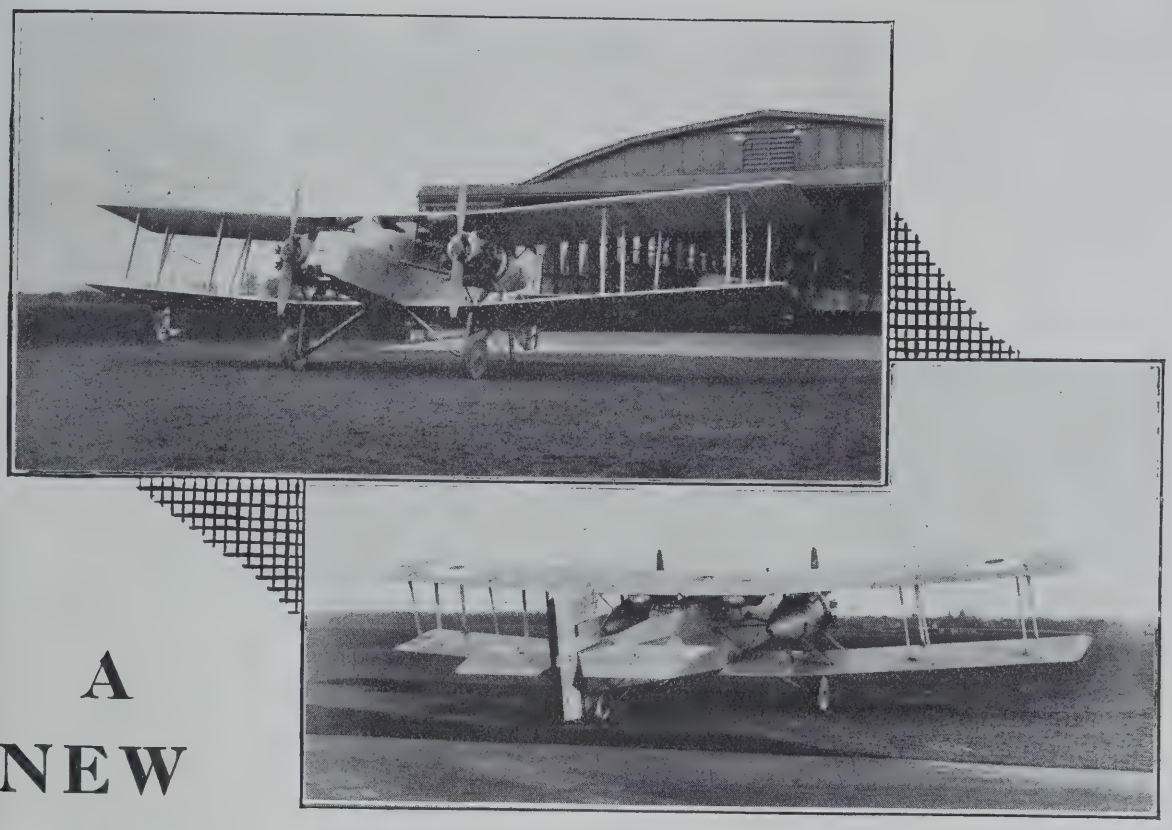
Presumably every aircraft firm already has its regular source of supply for tools and machinery, but there is always the possibility that T. C. Jones & Co. may be able to offer something useful and new, or may be able to supply at a better price than that at which firms are buying at present. Therefore one strongly recommends the Works Managers of aircraft firms to send for a copy of the firm's list, which will be forwarded on receipt of a trade card.



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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 20; Tuesday, 15; Wednesday, 22; Thursday, 19; Friday, 16, Saturday, 23; Sunday, 12.

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AIR UNION:

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K.L.M.:

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DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

DE HAVILLAND AIRCRAFT CO. LTD.:

Machines 2, passengers 0.

Total number of trips by British machines: 86, carrying 299 passengers. Foreign machines: 41, carrying 194 passengers.

Comparative Figures:

For week ending May 24:

Machines, 127; Passengers, 493; Crews, 152; Total personnel, 645.

Corresponding week, 1924:

Machines, 81; Passengers, 271; Crews, 130; Total personnel, 401.

Corresponding week, 1923:

Machines, 105; Passengers, 353; Crews, 175; Total personnel, 528.

Corresponding week, 1922:

Machines, 162; Passengers, 337; Crews, 198; Total personnel, 535.

Corresponding week, 1921:

Machines, 89; Passengers, 350; Crews, 106; Total personnel, 456.

Corresponding week, 1920.

Machines, 91; Passengers, 138; Crews, 98; Total personnel, 236.

Croydon Notes.

It is always rather a difficult matter when resuming the writing of these notes after an interval, to live up to the high standard set by one's *locum tenens*. It is however distinctly comforting to hear that at any rate Mr. Cobham dislikes one's own notes less than those of the said *locum*. One will certainly stand Mr. Cobham an ice-brick next time he visits the office of THE AEROPLANE.

Aeroplanes, one is glad to note, have hardly intruded on one at all during the past month, the only culprit being Mr. Bert Hinkler, who nosed one out in retreat on the Avro Bison Amphibian.

Croydon is now getting into its stride for the summer season, and the poor old aeroplanes, who are anything up to five years old, will soon be working themselves to death trying to cope with the rush of traffic and wishing they were five years young in design, even though they are admittedly kept in condition as new.

Mr. Drew, who for some time past has been flying at Brooklands, who is now the owner of the Sopwith Gnu, has joined Imperial Airways Ltd. as a pilot and is flying regularly.

Mr. Drew recently sold his Gnu to a Mr. Fraser-Bell. The said Mr. Fraser-Bell got in touch with Mr. Gib Ellis and asked him to collect the machine and take it to Oxford, where he intended running a joy-ride show. Mr. Ellis, who was at Whitstable at the time, was told by Mr. Fraser-Bell to come to Brooklands, where he would be waiting, at once, and was authorised by him to hire a car at Mr. Bell's expense.

When Mr. Ellis arrived at Brooklands there was no Mr. Bell, but Mr. Drew gave Mr. Ellis permission to take the machine away. Mr. Ellis flew to Stag Lane to make inquiries, and then took the machine to Croydon, where he garaged it. Mr. Drew then found that the cheque was a dud and so the machine was returned to him.

Before taking the machine away Mr. Ellis made inquiries from the Air Ministry about Mr. Fraser-Bell and was told that he was all right, but under-capitalised. Subsequently he was told that Bell's real name was Fraser, and that he had just served eight months in the second division for fraud in connection with the Fraser Flying School. Meanwhile Mr. Fraser is not to be found, and Mr. Ellis is considerably out of pocket. If anyone knows the whereabouts of Mr. Fraser or Fraser-Bell this paper would be pleased to hear of him.

M. Grosfils, of the Air Union, tells one that tests are to be made next month, if permission be forthcoming, with an F.B.A. flying boat with alightings on the Seine and the Thames. The alightings on the Thames will be at Hammersmith.—G. D.

Northern Air Lines, Limited.

Mr. R. H. MacIntosh, who was for some months employed as chief pilot to Northern Air Lines Ltd., has now returned to Imperial Airways Ltd. The reason for his return is that in December last he was given six months' leave by Imperial Airways Ltd. to go out East. Having been let down by his Oriental employers, he returned before his leave was up and spent that time putting in valuable work getting the Belfast-Stranraer route into running order. How successful he has been is shown by the 100 per cent. reliability and regularity of the service.

He has been replaced by Mr. Gib Ellis, of "Roof-of-the-World" fame, who is a pilot of outstanding ability, and, with Mr. Ellis and Mr. MacDonagh, the other pilot, the further success of the service should be assured.

The service to Londonderry has now been opened, and an announcement with regard to a subsidy from the Northern Government may be expected shortly. It is hoped that no "wild things" (see "Evening News") will be met by Mr. Ellis on this route.

An Avro has just been purchased as a general utility machine, which will be used as a runabout and for propaganda purposes.—G. D.

The Flight to the North Pole.

Captain Amundsen, the Norwegian explorer, left King's Bay, Spitzbergen, at 5.15 p.m. on May 21, in an attempt to fly to the North Pole. The pilot of the second machine is Lieut. Dietrichsen. Lieut. Omdhall, who was with Capt. Amundsen in Alaska, two years ago, is taking part in the expedition and also Lieut. Riiser-Larsen and Mr. Lincoln Ellsworth, an American.

The machines used by Captain Amundsen are two Dornier "Wal" flying boats, built at Pisa, under license from the German Dornier Company, by the Societá di Construzioni Meccanichi di Pisa. Each is fitted with two 375 h.p. Rolls-Royce Eagle IX engines. They have a span of 74 ft. 9 in. and a length of 53 ft. 2 in. The weight empty is about 6,000 lb., the maximum speed is about 117 miles an hour, the cruising speed 96 miles an hour, and the maximum height to which they can climb, 14,000 ft.

For the flight to the Pole the machines started with a supply of petrol sufficient for a flight of 1,600 air miles.

In normal circumstances the double journey to the Pole and back could have been made in sixteen hours. In the event of an accident to the machines the expedition was equipped with an outfit and provisions for a return on foot.

At the time of going to press there was no news of the expeditions, whose return was then five days overdue.

An *Exchange* message from Washington, on May 25, states that a suggestion has been made, which may be adopted by the Navy Department, to send either the *Shenandoah* or the *Los Angeles* to search for the missing explorers. This proposition is purely nonsensical.

What seems most likely is that having reached the Pole by aeroplane the explorers decided to walk back. That was more or less part of one scheme for reaching the Pole some time ago, but it was not approved as a public policy, as difficulty was found in persuading people to subscribe for the purchase of a machine which was only to be crashed and left.

Personally one regards these polar expeditions, except a purely geological and topographical affair like the Oxford Expedition to the polar regions but not to the Pole itself, as waste of time and money. The Pole was reached by Peary some years ago (1908 or 1909 one believes), so there is no object in going there again. Nobody knows anybody at the Pole and there seems to be nobody to know, so a mere call there, without definite object, seems useless.

An Ambulance Success.

According to a report from British Guiana the Fairey-Rolls-Royce Ambulance Seaplane which was recently acquired by the Real Daylight Balata Estates Ltd. has been instrumental in saving the life of Mr. Gagan, the officer in charge of the Government Wireless Station at Apoteri, who was ill with fever.

It is well known that white men who sicken of fever at up-country stations in British Guiana are in grave danger unless immediately moved to a coast-town hospital for treatment. Such transport in the past has been very difficult owing to the impassable nature of the country, and many deaths have resulted.

On this occasion the Fairey Seaplane left Georgetown carrying the officer who was to relieve Mr. Gagan, arrived at Apoteri and returned with Mr. Gagan, covering a total distance of 522 miles in six hours, a journey which by the ordinary method of transport would have entailed some five weeks' travel by land and water.

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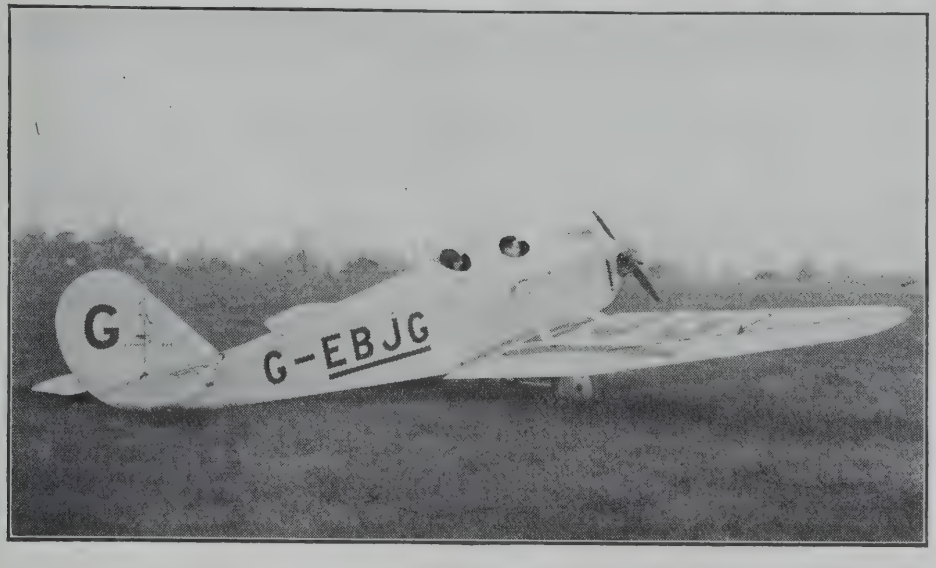
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The Southern Counties Aviation Co.

The Southern Counties Aviation Co. Ltd., of whom the leading light is Mr. Geoffrey V. Peck, have now made their headquarters at Brooklands. They have already acquired a number of machines and they will this season despatch a number of joy-ride tours to various parts of the Kingdom. They are in need of ground engineers, who should apply to Mr. Peck at Brooklands Aerodrome.

The Nordic Air Line—Some Corrections.

In the short article which appeared recently concerning the inauguration of the all-Nordic Air Line between London and Sweden the statement was made that the machine which actually made the through connection between Amsterdam and Malmo was one belonging to the Danish Air Transport Company and that the Swedish Line organised by Mr. Florman was not to start operations till this current week. This information was obtained from Imperial Airways Ltd.

However Mr. Florman himself who was in London on Friday last tells one definitely that the machine which took Mr. Britten Austin and Mr. Linney from Amsterdam to Malmo was one belonging to his line which began its operations on May 15. The particular machine was a three-engined all-metal monoplane of Junkers design, the parts of which were made in Germany and were assembled at the Swedish Air Line works at Lindholm near Malmo. Future machines for the line will be built throughout at Lindholm.

In the same article the statement was made that *Airways*, the journal edited by Mr. Linney, one of the first passengers, is the house organ of Imperial Airways Ltd. One is informed that *Airways* is not the house organ of Imperial Airways Ltd. but that it is largely supported by Imperial Airways advertising because it appeals to the aeronautically uneducated public rather than to the Air Forces of the various nations and the people who are already interested in aviation.

One expresses one's regret to *Airways* for the error. And one is glad of having this opportunity of correcting the general impression which exists concerning that highly-educative publication.

The Bamel.

The Bamel, known sometimes officially as the Mars I and later modified to be the Gloster I, always with a Napier engine, is being converted at the works of the Gloucester Aircraft Co. Ltd. into a seaplane and it is to be used as a practice machine preparatory to flying the Gloster II and its heirs and successors.

This seems to be a really sound move and the only reason of which one can think why this was not done two years ago is that the machine now belongs to the Air Ministry and it has taken all this time for the correspondence on the subject between a private firm and a Government Department to mature.

The Avro Training Machine.

A report of the lecture given by Mr. R. J. Parrott before the Institution of Aeronautical Engineers on "The History and Evolution of the Avro Training Machine," has now been published in the form of a booklet and can be purchased from the Institution, 60, Chancery Lane, W.C.2, prices 1s. 6d. The report is fully illustrated with photographs, and besides being interesting and informative is useful as a book of reference for anything concerning Avro machines.

Mr. Dyott's Disappearance.

Readers of The Aeroplane will regret to hear that considerable anxiety is felt for the safety of Mr. G. M. Dyott, who, in the company of Mr. Johnson, has been engaged in the exploration of the Amazon.

Mr. Dyott was a very early aeroplane pilot, who flew in Mexico before the war, and the designer of certain very promising early aircraft, particularly of a twin-engined machine which was built for the R.N.A.S. during the earlier part of the war.

Mr. Dyott served in the R.N.A.S. and R.A.F. during the war and was demobilized as a Squadron Leader. After the war he went to Peru from whence he crossed the Andes to the head waters of the Marañon—the main stream of the series of rivers which unite to form the Amazon, and then travelled down stream to Iquitos. In 1919 he read a paper before the Royal Aeronautical Society on the Possibilities of Aviation in Peru, based on his experiences on this journey.

He later returned to South America to carry out the trials mentioned above. The last news received from him relates to the successful ascent of Sangar, an active volcano never before climbed. It is known however that he had intended to set out for a totally unknown region, and the total absence of all news has given rise to fears for his safety.

A Staff Function.

A Dinner was given at the Holborn Restaurant on the evening of the 22nd instant by the executive staff of the Fairey Aviation Company Limited, to Mr. C. R. Fairey and his co-directors.

Mr. Hazell, the Secretary of the Company, who was in the chair, in proposing the health of Mr. Fairey, referred to the firm's present favourable position, and to the fact that it had almost completed the first decade of its life. The occasion was a suitable one, he considered, upon which to make a presentation to Mr. Fairey as a mark of esteem and loyalty of the Staff. This took the form of a suitably inscribed silver table centre.

Mr. Fairey in responding to the toast, after thanking the Staff for the very handsome present, briefly outlined the future of the firm. Aviation's prospects for the immediate future were quite rosy, so far as orders for military and naval types were concerned, and although at present not looming very large, Mr. Fairey was convinced that Civil Aviation must also come to the fore in the-not-too-far-distant future. Various other toasts, and speeches, also musical items, combined to make the evening pass quickly, and at the conclusion all were agreed that the event had been a complete success.

PERSONAL NOTICES.

DEATHS.

FINDLEY.—On May 20, at Sialkot, India, as the result of a flying accident, Flg. Off. Arthur Findley, No. 31 Sqdn., R.A.F.

Mr. Findley was posted to No. 31 (Army Co-operation) Sqdn., Ambala, in December, 1922, after a twelve months' course of instruction at No. 1 F.T.S., Netheravon, and six months at the R.A.F. Depôt. He was promoted to the rank of Flg. Off. in September, 1922.

WOODYATT.—On May 22, at Northolt, as the result of a flying accident, Flg. Off. Arthur Reinagle Woodyatt, No. 32 (Fighter) Sqdn., R.A.F.

Mr. Woodyatt was posted to No. 32 Sqdn. in December, 1923, after a twelve months' course of instruction at No. 2 F.T.S., Duxford. He was promoted to the rank of Flg. Off. in August, 1924.

FORTHCOMING MARRIAGE.

GOATCHER—MARMION.—The marriage of C. A. Goatcher, Flg. Off., R.A.F., School of Naval Co-operation, Lee-on-Solent, and Miss Amy I. Marmion will take place at the Church of St. Michael and All Angels, Bedford Park, W., on June 6.

BIRTHS.

IREDELL.—On May 20, to Marjorie, wife of Wing Cmdr. A. W. Iredell, R.A.F., 7, Cumberland Terrace, N.W.1.—a daughter.

JOHNSON-ALLEN.—On May 22, at Longclose, Winchester, to Clara, wife of Flg. Off. W. S. Johnson-Allen, R.A.F.—a daughter.

SWAN.—On May 19, at 29, Deronda Road, Herne Hill, to the wife of H. Swan, late R.F.C. and R.A.F.—a daughter.

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Vol. XXVIII. No. 22. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

THE THREE STAGES.

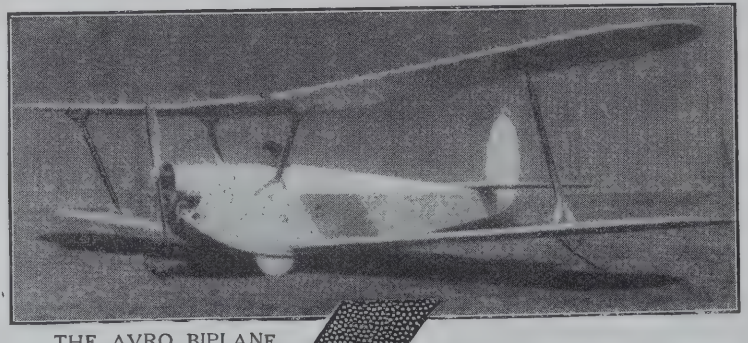


LIGHT AIRCRAFT:—Here are seen the three stages of De Havilland touring aircraft viewed from behind and before. The D.H.53 may be called the motor-cycle class, the D.H.60 (Moth) is the robust light car class and the D.H.51 is the medium powered general purposes tourer. The De Havilland Aircraft Company, Ltd., are to be congratulated on their efforts to find out what really is wanted. All three machines illustrated are thoroughly good aeroplanes.

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ON SCIENTISTS AND ENGINEERS AND THE R.A.F.—I.

Certain remarks by the Chief of the Air Staff in his address the University of Cambridge lead one to hark back to, or sume, the discussion on the subject of engineers in the oyal Air Force. And because, somewhere in the dim ture, there will be an exact science of aeronautics which ill itself affect the course of aeronautical engineering it is ell to discuss scientists in general in their relation to the elfare of the R.A.F. and the progress of British aviation.

The passage in Sir Hugh Trenchard's speech to which one fers is that in which he said that one of the great principles which he had adhered was that every pilot must under- and his engine and aeroplane at least as well as an owner- iver who did not keep a chauffeur understood his car. He lded that since the War it had been difficult to give suffi- ent education, but he felt that in another five or ten years' me every officer would know enough about his machine to ep it in running order and that until that stage was ached we could not develop the Air Service to its utmost tent because it would be too expensive.

As one said at the time, the question is whether every ficer shall be an engineer within his own personal limits whether there shall be a distinct engineering corps or gineering department in the R.A.F. on whom will rest the sponsibilities for the airworthiness of machines which may flown by pilots who are entirely ignorant of mechanical atters.

Thus it will be seen that there are three distinct schools of ought on the subject of engineering in the R.A.F.

There are those who would like to see the engineering ork of the R.A.F. placed in the hands of a separate En- neering Department staffed by civilians, just as e Works and Building Branch is staffed by civi- ans and as separate from the Service personnel as is the aff of the Works Department.

There is a second faction which would like to see an Engi- er Corps in the R.A.F., all in uniform and carrying the nal R.A.F. Service ranks but as distinct from the flying rsonnel as the old Engineer Officers of the Navy were dis- nct from the Executive Officers, or as the Royal Engineers e separate from the line regiment of the Army.

And there is the third school of thought, indicated by Sir ugh Trenchard, which believes that every flying officer ould have such engineering training as he is capable of sorbing, plus special opportunities to specialise in prac- al engineering and in aeronautical science for those whose tural abilities lead them in that direction.

The Civil Department Idea.

So far as the idea of a civilian Engineering Department is ncerned, that may one believes be condemned at the start. here is nothing quite so detrimental to the efficiency and scipline of a Service as the interference of civilian officials, her of course than those concerned with pure book-keep- g such as the Treasury people and the Secretarial Staff at e Air Ministry.

We have far too much civilian interference with aeronau- al engineering in the Air Ministry at present. The mere ct that our best war machines are inferior in performance those of most foreign Powers, in spite of the construc- nal superiority of British aircraft, is entirely due to the ay in which our Trade designers are hampered by the vilian pseudo-scientists at the Air Ministry. And those o understand how these self-esteemed and self-esteeming perts interfere with design will readily understand how a mplete department of civilian engineers working through- t the Air Force at all air stations and trying to run squadron orkshops would make a complete hash of the flying capa- lity of His Majesty's aircraft.

It may be admitted that scientists when properly used can made to perform some beneficial function in the scheme things, but the scientist very seldom actually produces ything. His chief usefulness is to explain why a certain echanism, or a certain process, does so after the practical an has made it do it.

There is probably no nation in the World which has made better use of its scientists than has Germany. But in Germany the scientist as a rule is merely used as a tool by the practical man, whether the practical man happens to be an engineer or a commercial man or a financier. And it is because the German knows how to use scientists without allowing the scientists to interfere with progress that German industries of all sorts attained to such a remarkable pitch of efficiency before 1914 and have re-established themselves still more remakably since 1918.

A War Story.

One of the most delightful stories of the War concerns the German method of dealing with scientists. It comes from a Sapper Officer to whom after the War it was told by the curator of the Museum at Lille, which city may be remembered as lying only a few miles behind the actual fighting line in Flanders. The curator remained in Lille throughout the German occupation and beyond the usual discomfort of living under an invader's heel had no complaints to make about the treatment which he received from the Germans.

Incidentally one may remark that one happened to be in Lille oneself about a week before the signing of the Armistice in 1918 and only a couple of weeks after the city had been evacuated by the Germans and occupied by British troops. At that time one had the good fortune to be staying at R.A.F. Advanced Head Quarters, then living in German huts alongside Velu Wood, right in the middle of the devastated area, and one had gone into Lille with an R.A.F. Staff Officer to visit the Head Quarters of an R.A.F. brigade there. In Lille we were able to buy, in an ordinary *patisserie*, sugary cakes of a kind which nobody had seen in England for a year or so. And these cakes were made from beautiful white flour supplied by the Spanish-American Relief Committee to the French and Belgian inhabitants of the area occupied by the Germans. It struck one at the time as being remarkable testimony to the honesty and humanity of the Germans that while Germany herself was starving such excellent foodstuffs should pass through Germany to the occupied area.

However, to return to the curator of the Museum: Apparently the Germans treated the Museum with the respect which was to be expected from a cultured people, and the only way in which the staff were discommoded was that the German High Command billeted on the Museum a number of high-class German geologists who had been mobilised for the purpose of advising the military people on such subjects as where trenches of different types could be dug, and where dug-outs could be made of sufficient depth without danger of being flooded, and where mine galleries could be driven without fear of undermining, and so forth and so on. With true German thoroughness these assorted scientists were put into uniform and enrolled as the *Kriegs Geologik Korps*.

Now it came to pass in due time that the Germans wanted to mine the Messine Ridge or the Vimy Ridge or some other ridge and the High Command consulted the *Kriegs Geologik Korps* as to the lowest level at which the mine galleries could be driven, so as to make sure that if the British Army endeavoured to counter-mine at a lower level the British mine galleries would inevitably be flooded.

The German geologists having consulted their scientific data gave a certain level as the safety line, and the German Army proceeded to dig. And then on an ill-omened day some quite impossible British mines went up, taking with them the German mine galleries and about four battalions of German troops.

Quite soon afterwards the *Kriegs Geologik Korps* was paraded in front of the museum at Lille and numbered off according to age. At the age of forty a clean cut was made. All the geologists over the age of forty were sent back to Germany. All those under forty were sent into the trenches. And the *Kriegs Geologik Korps* was disbanded.

How to Treat Scientists.

Now that is the way to treat scientists. They should be

DO NOT FORGET THE R.A.F. DISPLAY ON JUNE 27.

given a fair chance of proving that their science is real knowledge, as the root of the word implies. And if they fail to make good then they should be put to some useful work where their bodies can be turned to good account even if their brains have failed to function as expected.

Much good would undoubtedly accrue to the Royal Air Force if all the so-called scientists at the Air Ministry and at Farnborough were numbered off according to age, in the manner of the *Kriegs Geologik Korps,* those above forty being sent for a term of years to work at the bench in aircraft factories and those under forty being let off with Short Service Commissions as pilot officers in the R.A.F. At the end of five years the whole lot would certainly be no more ignorant of Aeronautical Science than they are at present and they would certainly know a lot more about aircraft.

One might perhaps except from this more or less surgical operation that particular department which does the donkey-work of stress calculations on aircraft designs, as the majority of them do appear to have practical engineering knowledge even though they do not profess to be aeronautical scientists. Personally one can no more understand their methods of calculation than one can understand the Differential Calculus. But one hears constantly from practical aircraft designers in the Aircraft Industry that this particular sub-department not only does quite good work itself but is even able to recognise good work when done by mere trade designers, and has such liberality of mind that it will even admit the introduction by the Trade of new methods of calculation or new methods of construction which had not occurred to the department itself.

As one does not happen to know any of these stress calculators oneself one may say that this is an entirely unsolicited testimonial.

Uniform versus Plain Clothes.

That being that, we may now consider further the objections to a civilian Engineering Department in the Air Force. Perhaps the one thing that makes it perfectly impossible is the fact that a man in uniform, unless he has a weapon of some kind in his fist, is at a grave disadvantage when opposed to a man in plain clothes. And even when an officer on the active list gets into plain clothes himself in his office in the Air Ministry he is still equally at a disadvantage in relation to the civilian

Any pen-pushing civilian clerk in the Air Ministry or any other Government establishment can rise up and argue with officers of quite exalted rank. And naturally any civilian who can operate a slide-rule or manipulate tables of logarithms has an unfair advantage in argument over an officer whole sole accomplishment is that he can win battles.

But when once your slide-rule artist or your engineer is put into uniform, or is liable to wear uniform when on duty, he then becomes automatically inferior to anybody who is entitled to more stripes than he wears himself. And then the senior officer who knows what he wants in the way of flying machines or engines, and intends to get it, can save an immense amount of time and brain fag, which might otherwise be wasted in argument, by merely issuing a positive or a negative order.

Therefore one is entirely opposed to having anything in the nature of a civilian Engineering Department in the Air Force.

One imagines that quite enough difficulty will be found in handling civilian mechanics and so forth in the repair shops of the Home Defence Force of the R.A.F., as one believes is part of the scheme. Of course in the event of a sudden outbreak of war the civilian mechanics and other civilian employees at R.A.F. stations and supply depots and so forth will promptly be conscripted and put into uniform. But so long as peace survives there will probably be difficulties about inducing civilian employees to obey orders if the said orders appear to be irrational from the point of view of the civilian who does not understand Service necessities.

The Corps Idea.

We may now turn to the question of a special Engineer Corps, or engineer rank, within the R.A.F. itself. One gathers from various people with whom one has discussed the subject that the objection to a separate Corps is that it means a separate department, much as the Medical Service and the Stores and Accounts people form separate departments although they are in uniform. That of course means inter-departmental delays and inter-departmental squabbles and more and more paper work, all of which is detrimental to the highest efficiency.

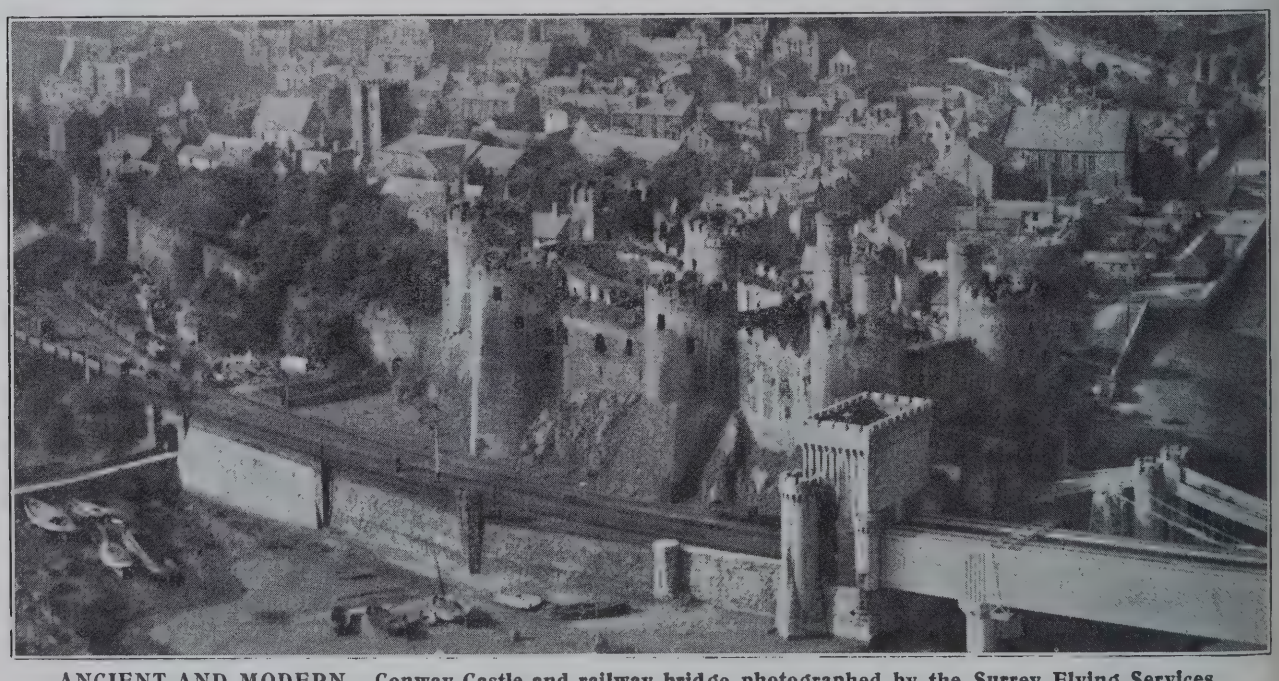
Also, actually on the stations themselves, though the engineer officers would be of an entirely separate breed from the flying officers and executive officers, there would certainly be a certain amount of friction between the people who flew and the people who did not. And the engineer personnel would be bound to have grievances because the executive people wanted their mechanics out of the shops for drill at certain times when they wanted them in the workshops.

If the engineer officers were a separate grade altogether they obviously could not have executive command over the workshop personnel, because in effect the whole personnel of an air station consists of workshop hands, barring the batmen and clerks. And if the technical people were a separate Corps, as are the Royal Engineers in the Army, it would mean that the workshop officers would have complete executive control over their men in the same way that Sapper officers have in the Army. Which would mean that the flying personnel would have nobody to command except the clerks and batmen.

If on the other hand the workshop officers were of a separate grade, like Engineer Officers in the Navy, and the men were ordinary R.A.F. personnel, then the workshop officers themselves would have nobody to command except when the men were actually working at the bench in the shops or on the machines. Things used to be much that way in the Navy when the Engineer Officers could order their men about so long as they were in the engine room or in the stokehold, but did not command them when they were paraded on deck.

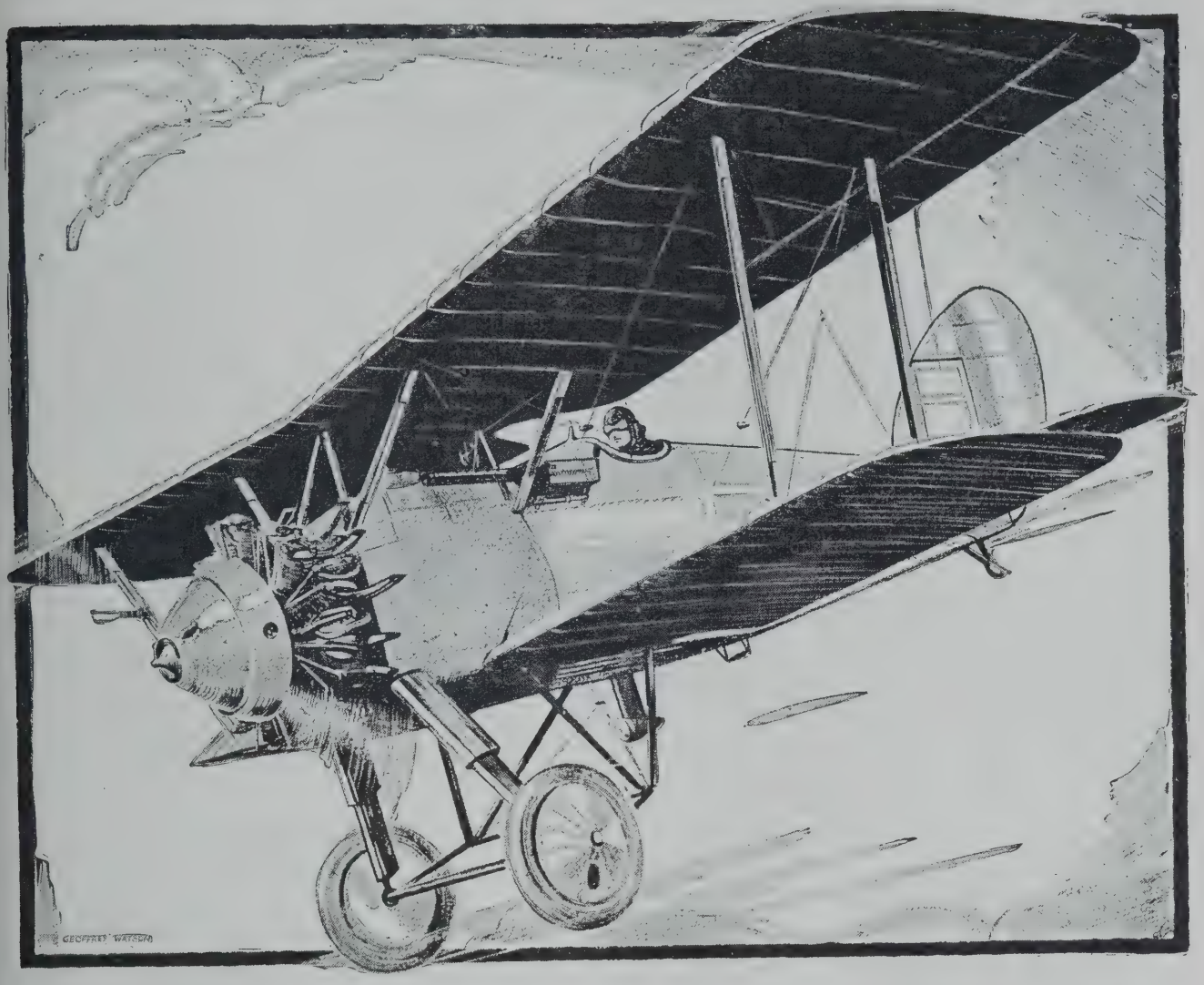
One believes one is correct in saying that it is only during comparatively recent years that Engineer Officers, R.N., have commanded engine-room ratings on parade, or whatever corresponds to parades when the Navy stands about on deck.

Furthermore, there certainly is the objection that if the workshop officers, and technical officers generally, became



ANCIENT AND MODERN.—Conway Castle and railway bridge photographed by the Surrey Flying Services.

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a separate Corps or a separate rank they would do no flying, and so there would be constant argument between such flying officers as might take a keen interest in the mechanical side of their job and the engineer officers who would think that they knew all about it because of their specialised training.

On the whole therefore, although one is personally by reason of one's own training predisposed in favour of a separate Engineer Corps, one can quite see that there are serious objections to it from the point of view of the all-round efficiency of the Royal Air Force.—C. G. G.

(To be continued.)

WHO MADE THE FIRST FLYING MACHINE?

[Since the above was written it is announced that the Smithsonian Institute have agreed to all Mr. Orville Wright's conditions and the machine in question will not now be sent to England.]

Apparently the gift or loan of the first Wright biplane to the Science Museum in South Kengsington by Mr. Orville Wright is likely to revive the old controversy as to who made the first flying machine. Setting aside the attempt of Sir George Cayley about 1809 with a machine which was approximately aerodynamically correct but lacked an engine in spite of Sir George's effort to drive it with a gun-powder motor something like a revolver in principle, and also setting aside the Clement Ader steam-driven bat-winged monoplane of 1897, the claim seems to rest between the Wright Brothers and the late Professor Langley.

There is no disputing the fact that Mr. Orville Wright was the first man who ever flew, his first flight being made on Dec. 17, 1903. But the claim has been made and steadfastly maintained on behalf of Professor Langley that his tandem monoplane which he called an "aerodrome," was "the first man-carrying airplane in the history of the World capable of sustained free flight."

What one may call the psychological situation is well put by Mr. Lester D. Gardner's paper *Aviation* dated May 18, 1925, in which the leading article says :—

When scientific experts become partisans and propagandists any kind of statements may be expected. In court work the testimony of partisan scientific experts may be secured on every side of almost any question, no matter how greatly it is opposed to the public good. Government scientific men and institutions are supposed to keep clear of this sort of favoritism. But affection for Professor Langley and pride in the achievements of the Smithsonian Institution has brought about a situation that raises a question as to the scientific properties.

If Langley had not been secretary of the Smithsonian, it is unthinkable that the persistent efforts would have been made to perpetuate an erroneous conception in the public mind. He would have been relegated to an honored position in the list of pioneers in human flight.

Instead, for the last ten years, there has been constant and seemingly deliberate efforts made to place the name of Langley ahead of the Wrights in the honours of discovering a method and a means to fly. So powerful have been the political and departmental influences behind these attempts that even the Army named its greatest field and what was then intended to be its great experimental station, Langley, while a storage depot bears the name of Wright; in the Navy the first airplane carrier is called The Langley while a balloon mother ship is known as The Wright.

There is little need to recount how the original Langley airdrome was removed for the purposes of the tests. It is enough to know that it was done. On its return to the museum it was given a label that would impress the uninformed that it was the first successful airplane.

For many years it has been no secret that the original Wright airplane would not be entrusted to The Smithsonian so long as the influences that had conducted the Langley propaganda in this country were in charge. At one time it was thought that Dayton might erect a shrine for this most famous of its possessions. But now that Orville Wright has decided to send it to an English Museum the public may awake to some of the damage done by the zeal of Langley's friends. It is to be hoped that the removal to England is only as a loan and that some day the most prized of all aeronautical possessions will find its final home in a national scientific shrine.

The facts are that though Mr. Orville Wright made his first flight in 1903, Professor Langley tested his machine over the Potomac River in 1902 and 1903, and wrecked it owing to the defects of certain parts. The remains were kept and repaired and strengthened in places and the machine was actually flown by Mr. Glenn Curtiss at Hammondsport on June 2, 1914.

In the same issue of *Aviation* the two sides of the argument are presented by Mr. Orville Wright and by Dr. Walcott who is the Secretary of the Smithsonian Institute.

Mr. Wright's argument may be boiled down to a charge that the test of the Langley machine in 1914 was a fake, in that the machine was fitted with a more powerful engine than the original, that the airscrews were altered and that the tail was altered and that by strengthening the machine where necessary it had become a different apparatus altogether.

Also Mr. Wright says in effect that he is sending his machine to England because he cannot trust it in the hands of the Smithsonian people, for he says "I would not wish to leave to the discretion of the management of any museum the right to make any change in the design of it for any purpose whatever. If one-half of the changes made in the Langley machine were to be made on our machine it could easily be proved not 'Capable of sustained free flight.'"

That, if it means anything, means that as the Smithsonian people faked a successful flight for the Langley machine they are capable of faking the Wright machine and then showing in a practical test that it cannot fly.

As to the actual merits of the case there is no doubt that the original Wright machine was incapable of sustained free flight. Succeeding machines with more powerful engines did certainly make sustained flights but they were only kept in the air by the skill of the pilots although they were hopelessly unstable in every direction.

After about five years the Wright Brothers abandoned the original type, which had the elevators in front and no tail, and produced a design which was entirely different aerodynamically in which the elevators and tail were at the back as in the more advanced machines. This type proved to be inferior to its contemporaries and the Wright Brothers never produced any design which was a serious competitor of those produced by the Curtiss and other American and European designers.

Nevertheless, the Wright brothers claimed for some of their patents, which were concerned with the inter-connection and co-operation of the rudder and wing controls, such a wide range that they practically covered every possible method of control of aeroplanes. The claim was even made that the pilot himself, because he controlled the rudder and the wing controls, or ailerons, himself constituted the inter-connection of the two controls within the meaning of the patent.

Because of these sweeping claims and because of the dog-in-the-manger way in which they were made, not necessarily by the Wright brothers themselves but certainly by those who were interested in the Wright patents, a large number of people who were seriously interested in aeronautical progress disputed the validity of the Wright claims, which hampered severely the experimental work of the other designers.

For this very good reason every effort was made to prove that the Langley machine was in fact a practicable flying machine and existed before the Wright machine.

Dr. Walcott says that : "It was not an historical relic belonging to the National Museum, but an airplane left with the Smithsonian Institute by the War Department for experimental purposes." The inference here is that the work of 1914 was merely carrying on Prof. Langley's experiments and that the people who did it were not guilty of the vandalism of faking a relic from the Museum.

From this anyone may see that Dr. Walcott says in effect that if Mr. Wright did put his original machine in the Smithsonian Museum as a relic it would not be faked and that nobody would want to monkey with it anyhow as it is considered as being practically useless except as a relic.

The root cause of all the trouble seems to have been the ultra-provincialism of the Wrights and those connected with them. Their whole handling of the business was so extraordinarily English. No blame attaches to the Wrights for it. They were born and bred in Dayton, Ohio, and when one was there last year one felt the whole place was steeped in that same provincial atmosphere which prevails in certain English cities. The same sort of atmosphere exists in certain directions in most British Industries.

On the other hand, the action of the Smithsonian people and the presentation of their case by Dr. Walcott is equally typical of the essentially metropolitan atmosphere of Washington, merely tempered by the fact that the Smithsonian Institute combines with it a technical and scientific outlook.

The actual facts of the case appear to be that though the Wright machine was the first to fly it was not a practicable flying machine and that although the Langley machine did not fly in 1903 it was in fact a practicable flying machine when made sufficiently strong.

That is to say the Wright machine was aerodynamically wrong but mechanically good enough, whereas the Langley machine was mechanically wrong but aerodynamically good enough. And as flying is a matter of aerodynamics, into which mechanical structure enters only as a component part of success, one believes that Dr. Walcott and the Smithsonian Institute and Prof. Langley have proved their case.

One hates to be rude to the first man who ever flew, but one can only characterise Mr. Orville Wright's removal of his machine from America as a piece of childish spite. Of course a good many people in this country who set store by relics and so forth will be quite pleased to go to South Kensington and see the first aeroplane which ever flew. But the interest of the machine is purely sentimental and it has

Napier Engines carry the Secretary of State for Air 3,500 miles without a hitch





Sir Samuel Hoare and Mr. L. S. Amery arriving at an aerodrome in Iraq.

DURING the Easter recess, the Secretary of State for Air (Sir Samuel Hoare) and the Secretary of State for the Colonies (Mr. L. S. Amery) officially toured the air stations in Iraq.

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no educational value whatever, for the good reason that students of aviation who want to know exactly how an aeroplane ought not to be designed or built can learn quite as much by looking at the photographs and models of the same machine which have existed in this country for years.

As to the authenticity of the machine, Dr. Walcott quotes a letter from the Wright brothers dated Mar. 26, 1910, replying to a request for an example of the Wright machines as saying: "We can reconstruct the 1903 machine, with which the first flights were made at Kitty Hawk. Most of the parts are still in existence."

This letter therefore leaves one in doubt as to which parts of the machine which is to be exhibited at South Kensington were in fact in existence in 1903 and which of them have been made since that date purely for exhibition purposes.

When one saw the machine on show at Dayton it had obviously had all its wiring renewed, and as the wires are the essential thing on which an aeroplane depends for its existence one might justly argue that the machine has had its most essential parts renewed just as the Wright faction argued that the Langley machine which was flown in 1914 was not the original Langley machine because it also had original parts renewed.

Personally one cannot help thinking that Mr. Orville Wright would have earned the respect of his countrymen far more if he had been able to get away from the atmosphere of Dayton, Ohio, and had swallowed his little provincial pride and had forgotten his pre-War quarrel with the Smithsonian Institute and had sent his ancient relics to repose in the museum of his country's capital.—C. G. G.

THE ROYAL AIR FORCE.

The London Gazette.

May 26.

General Duties Branch.—The following Flg. Offs. are granted perm. comns. in that rank (May 27):—D. M. Fleming, A. H. H. MacDonald. Lt. A. M. Pilling, R.N., is granted a temp. comn. as a Flg. Off. on attachment for four years' duty with the R.A.F. (Apr. 27). P. J. Fitzgerald, Lt., R.N., Flg. Off., R.A.F., relinquishes his temp. comn. on return to naval duty (May 17). The S.S. comns. of the following Plt. Offs. on probation are terminated on cessation of duty (May 27):—W. E. Fleming and A. R. C. Kirby.

Stores Branch.—The following are granted S.S. comns. as Plt. Offs. on probation, with effect from and with seniority of, May 25, 1925:—F. Scutt, D. G. Vaughan.

The following are transferred to the Stores Branch on probation in the ranks stated, with effect from, and with seniority of, May 25, 1925:—Flg. Offs.—R. M. Taylor, M.C., C. W. H. Moller, J. F. Young, M.M., C. B. Horsfield, F. H. Bedford, M.C., M.M. Plt. Offs.— B. W. Hemsley, St. J. F. Wintour (Lt., 16th Bn. London Regt., T.A.).

Chaplains' Branch.—The Rev. W. T. Rees is granted the local relative rank of Wing Cmdr. while employed as senior Chaplain, Iraq Command (Jan. 13).

Appointments.

Week ending June 1.

General Duties Branch.—Flight Lieutenant J. B. Allen, to Boys' Wing, Cranwell, 25/5.

Flying Officers W. J. Shilcott, D.S.M., to Air Ministry, 8/6. E. R. Hockaday, to No. 1 Stores Depot, Kidbrooke, 8/6. J. A. Moore, to R.A.F. Depot on appointment to a S.S. comn., 25/5.

Medical Branch.—Flight Lieutenant J. Prendergast, M.B., B.A., to No. 100 Sqdn., Spittlegate, 26/5. Flying Officer C. G. J. Nicolls, M.B., to No. 13 Sqdn., Andover, 26/5.

Stores Branch.—Flying Officers R. M. Taylor, M.C., C. W. H. Moller, J. F. Young, M.M., C. B. Horsfield, and F. H. Bedford, M.C., M.M., to No. 1 Stores Depot, Kidbrooke, 25/5. Pilot Officers B. W. Hemsley and St. J. F. Wintour, to No. 1 Stores Depot, Kidbrooke, 25/5. F. Scutt, D. G. Vaughan, A. Amy and C. E. Burke, to No. 1 Stores Depot, Kidbrooke, on appointment to S.S. comns (on probation), 25/5.

Fatal Accidents.

The Air Ministry regrets to announce that as a result of an accident near Spittlegate to a Fairey Fawn machine of No. 100 Sqdn., Spittlegate, at 6 p.m. on May 25, Plt. Off. Jack Terence Eve, the pilot of the aircraft, was killed, 341626 AC.1. George Edward Bruce dangerously injured, and 244302 AC.2. Percival Thomas Sharpe severely injured. AC.1. Bruce died of his injuries on the same day.

The Air Ministry regrets to announce that as a result of an accident at Andover in the evening of May 25, No. 241627 Cpl. Sydney Ronald Wilson, of No. 12 Sqdn., was killed whilst engaged in a practice parachute jump.

An Extraordinary Accident.

The Times of May 28 states:—

Flt. Sjt. Frank Lowry, R.A.F., a wireless operator stationed at Andover, was killed by electricity on Tuesday afternoon, May 25, while on a flight in which he was engaged in wireless tests. He was a married man, his home being at Abbotts Ann, Hampshire.

At the inquest, which was opened at Andover on May 27, Flg. Off. John Kenneth Smith, the pilot of the machine, said that after they had been in the air for about 15 minutes he noticed a smell and saw smoke coming out of the back cockpit. He throttled down the engine in order to speak to Lowry, but could get no answer. Lowry had apparently collapsed to the bottom of the cockpit. The witness then landed straight away. Lowry was attended by a doctor immediately and taken away on an ambulance.

Flt. Lt. Cyril Norman Ellen said there was nothing in the machine likely to kill a man. Lowry must have come into contact with an electric current in the air. The witness could only conclude that the causes were atmospheric. He had never heard of a man being killed by atmospheric electricity, but he had heard of apparatus being damaged.

Flg. Off. Cecil Nicholls, R.A.F., who examined Lowry, said he found him dead. Death was due to shock, following the discharge of an electric current through the body.

The jury, after conferring in private, asked that the inquiry be adjourned in order that the wireless officers and staff might complete their examination of the apparatus and make a report. The Coroner adjourned the inquest until Wednesday, June 3.

[It is worth while recording that in May, 1915, one was up in a captive balloon in France, and was wearing a pair of headphones connected to an aerial and earth. Atmospherics were very prevalent, as a thunderstorm was rolling round in the vicinity. Suddenly one felt a very severe shock in the head from the phones, which phones one promptly removed. On descending one was informed that the aerial had been charged up to its fullest capacity and what one felt was the subsequent discharge. On inquiry if there was any danger through this, one was told that some people can stand a greater shock than others, and it might easily prove fatal under certain conditions. Several similar incidents were noted about the same time.—G. D.]

The Independent Force, R.A.F.

The seventh re-union of the Independent Force, R.A.F., will be held at the R.A.F. Club, Piccadilly, on Tuesday, June 23. Air Chief Marshal Sir H. M. Trenchard, Chief of the Air Staff, who commanded the Independent Force in France, will preside.

This Force was set up as a separate organisation from the British Expeditionary Force in the middle of 1918 and established its headquarters near Nancy. From this centre it proceeded to bomb the principal German lines of communication and centres of munition production, and had plans definitely in view, when the Armistice was signed, for operations further afield, including the bombing of military and factory centres in Berlin.

The historic interest of the Independent Force, apart from the actual value of its work, lies in the fact that its employment marked the first occasion in which air power was operated as a separate and independent command.

The reunion is open to all R.A.F. members of the Independent Force and officers of Army troops and other attached units.

Tickets (price 10s.) can be obtained from the Honorary Secretary, Independent Force (Royal Air Force) Dinner Club, Room 546, Adastral House, Kingsway, W.C.2.

The Royal Tournament.

"For the Encouragement of Skill-at-Arms and the Benefit of such Naval, Military, and Air Force Charities as may be selected," the Royal Tournament opened at Olympia on May 28, and will continue until June 13, at 2.30 and 8 p.m. daily.

The Pageant part of the programme illustrates the history of the Gunners from the 17th century to the present day, and is a magnificent show. There is the usual Field Gun Display by the Royal Navy and Royal Marines, a Musical Ride by the Life Guards, and a splendid display of horsemanship by the Cavalry Schools.

The Combined Physical Training Display by the three Services includes a sword-swinging display, and a table of free standing exercises ending with a final tableau, and is a very fine performance.

The Drill Display by the Royal Air Force shows what can be done by competent instructors with a party of keen and highly-intelligent recruits. It is difficult to believe that the men who take part in this drill have only had an average of six weeks' instruction. The Drill Squad consists of half the present strength of the Recruits now at the R.A.F. Depot at Uxbridge, and Flt. Lt. Wombwell and his staff are to be congratulated on a magnificent exhibition. The Drill is carried out with rifles and the general smartness of the Squad. and the precision of its movements will warm the hearts of all old soldiers, who, "same as the sailor who settles by the sea," go to Olympia to recall the old spell of Service days.

An R.A.F. Achievement.

The annual *Marathon* race from Windsor Castle to Stamford Bridge, arranged by the Polytechnic Harriers, took place on May 30. There were 76 entries. The race was won by Aircraftsman S. Ferris (R.A.F., Uxbridge), in the record time of 2 hours 35 minutes 58 1-5 secs.

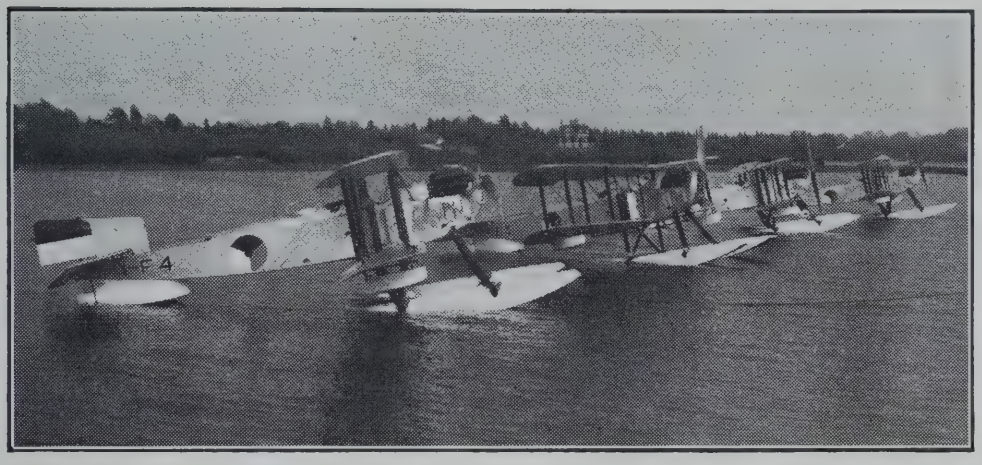
R.A.F. Dogs.

One of the most regrettable facts about the R.A.F. is that young officers, and one fears some older officers, do not

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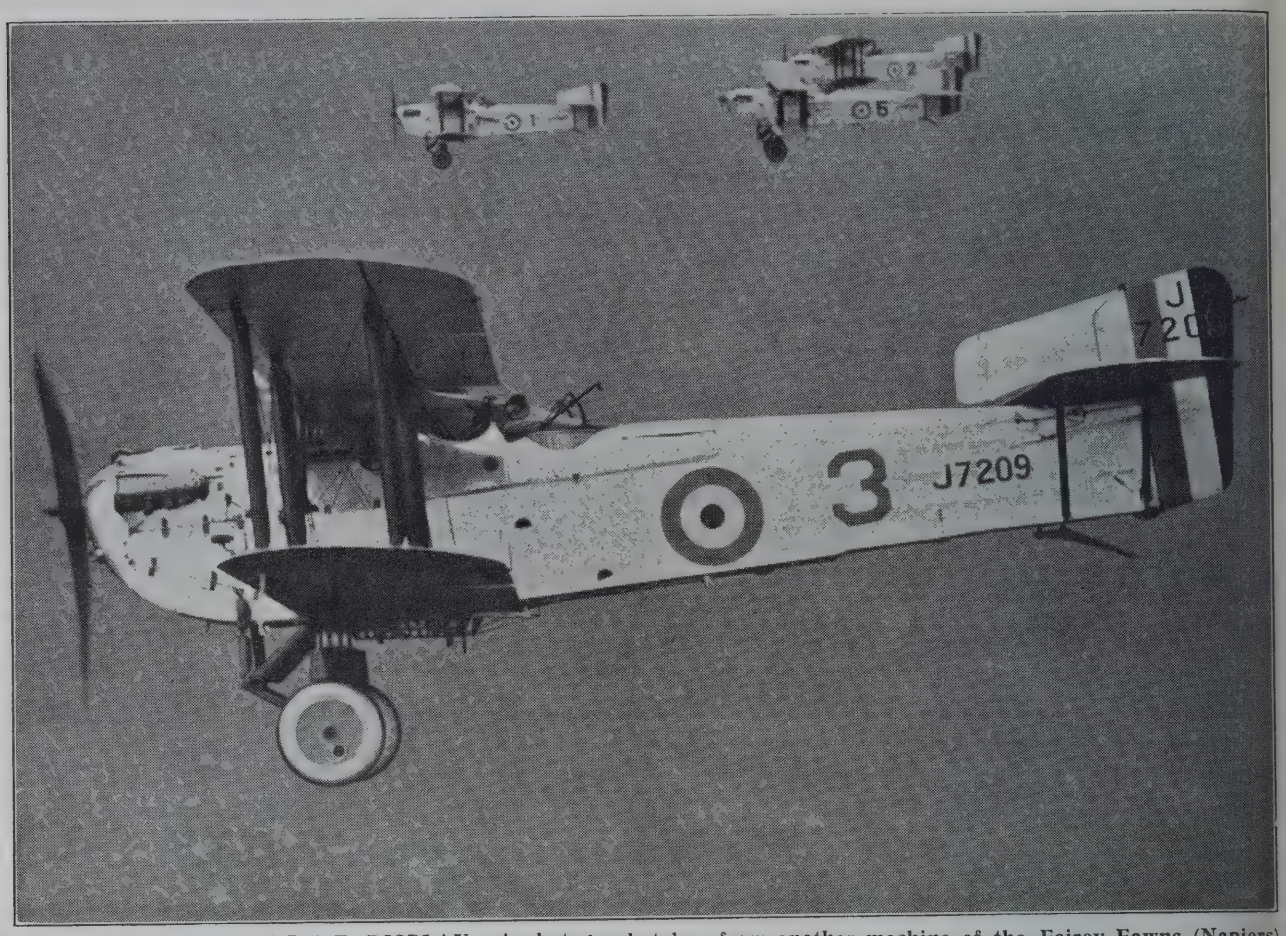
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The above photograph depicts a batch of Fairey Series III. Seaplanes which have just been supplied to the Dutch Government. It was in a machine similar to these that the Round Australia flight was made, a performance that has been awarded the Britannia Trophy for 1924. This and many other notable achievements have demonstrated the remarkable suitability of these aircraft for work in tropical climates.

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REHEARSING FOR THE R.A.F. DISPLAY.—A photograph taken from another machine of the Fairey Fawns (Napiers) of 100 (Bombing) Squadron of Spittlegate rehearsing the formation flying for the R.A.F. Display which takes place at Hendon on Saturday, June 27.

pay sufficient attention to Air Ministry Weekly Orders. If these Orders were read with due care not only would the personnel of the Air Force receive valuable information but they would also be vastly entertained on occasion.

Recently one has had some little correspondence with a friend in the Air Force on the subject and in one of his letters he writes as follows :—

"The pearl beyond price of the whole collection is that occurring somewhere in 1919; that states : 'Officers commanding stations where rat-catching dogs are held on charge, are hereby authorised to expend the sum of 1½d. per week for the purpose of buying soap for the cleansing of such dogs.'

"This order, I think, at once raises the question as to what constitutes a rat-catching dog (or Dogs, rat-catching, one). Can a dog join straight from civil life as a Dog, rat-catching? Or does he re-muster from Dog, ordinary, Group III, to Dogs, rat-catching, whenever a vacancy occurs on the Station. Or does he start off as Dog, ordinary, under training for Dog, rat-catching? The whole question, to my mind, is most involved."

Lawn Tennis.

The R.A.F. Lawn Tennis Association played their first Match of the season against Roehampton on May 30, at Roehampton, and were successful in beating the Club by 6 matches to 3.

Sq. Ldr. H. J. F. Hunter and Flg. Off. C. F. Roupell beat A. L. Stevens and A. D. Stocks 6—2, 6—3; beat H. E. Dawes and Col. Rose 6—4, 6—3; beat H. Hope and R. Bruce-Hay 6—2, 6—1.

Flt. Lt. C. E. Williamson-Jones and Flg. Off. E. H. D. Davies beat Stevens and Stocks 6—1, 9—7; beat Dawes and Rose 6—4, 6—3; beat Hope and Bruce-Hay 6—0, 6—1.

Sq. Ldr. N. Buckeridge and Flt. Lt. F. T. Boucher lost to Stevens and Stocks 1—6, 7—9; lost to Dawes and Rose 3—6, 3—6; lost to Hope and Bruce-Hay 4—6, 3—6.

The Deutsche Rundflug.

On Sunday, May 31, the Deutscher Rundflug opened, and of the 90 odd machines entered, 54 started on the first circuit.

Although the name implies a flight round Germany, the competition is more of the nature of a reliability trial and consists of a series of five circuits, starting and finishing at Berlin and covering the greater part of Germany. The name Rundflug has been resusciated by the German Aero Club in memory of the first German Aeroplane Race held round Germany in 1911.

The first circuit was Berlin—Schwerin—Hamburg—Bremen—Münster—Cassel—Magdeburg—Berlin, a total distance of 603 miles. The first machine left the Tempelhofer field at 04.00 hours, in the presence of thousands of spectators who had trekked out from Berlin in the earlier hours of the morning.

Two days are allowed for the completion of each circuit and of the 54 starters on the first circuit, 23 returned on Sunday, seven more by 14.00 hours on the Monday, and at 18.00 hours the total number which had completed the first circuit was 35.

The lowest-powered class, up to 40 h.p., produced eight starters, the 40-80 h.p. class, 27 starters; and the 80-120 h.p. class, 19 starters.

The Albatros L.69 (No. 80) (102 h.p. Siemens engine), pilot Herr Ungewitter, made fastest times, with 9 hrs. 1 min., the Udet monoplane second with 10 hrs. 26 mins.; and a Heinkel, third, with 11 hrs. 9 mins. A Junkers K.16 (8 h.p. Siemens engine) completed the course in 12 hrs. 18 mins. and a Junkers T.26 (83 h.p. Junkers engine) in something over 30 hrs.

In the class up to 40 h.p., the Mohammed monoplane (Blackburne Tom-Tit engine), built by the students of the Akaf Fliegergruppe Darmstadt, was the first of its class to reach Hamburg, and the Baumer monoplane (60 h.p. Wright Gale flown by Herr Baumer, was the first of the 40-80 h.p. class to reach Hamburg, having passed six of its competitors.

It is impossible to extract any moderately complete list of the actual starters, from the various newspaper reports, so that to attempt to give any sort of description of the competition during its early stages is well nigh impossible. However, the Editor was present at the start of the first circuit and it is hoped that next week's issue will contain a fairly complete description of machines together with his impressions of the opening stages of the Rundflug complete with photographic illustrations.

The Red Air Fleet.

It has been reported that on May 16, the railway and river transport workers of Soviet Russia presented to the Moscow Government a fleet of thirty-one aeroplanes, the cost of which was defrayed by popular subscription among the workers.

The squadron has been named the "Djerjinsky Escadrille," and two of the aircraft have been christened "Baginski" and "Wierzorkiewicz," in memory of the two Polish Communist officers who were killed recently by a Polish sergeant while they were being conveyed to the Russian border for exchange.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



"I WANT TO BE HAPPY, but I can't be happy till I've made you happy too." The photograph shows Mr. Alan J. Cobham leaving Stag Lane for Croydon on the De Havilland Moth (Airdisco Cirrus) the night before his flight to Zurich and back. Mr. Cobham undertook the flight in order to demonstrate to all and sundry how easy and safe the light aeroplane can be and it is his aim and object to get everyone to take up flying. Hence the title of the picture.

Mr. Cobham's Flight.

On Friday last Mr. Cobham made a very fine flight from London to Zurich and back in fourteen hours on the De Havilland Moth with the Aircraft Disposal Company (or Airdisco, as it is now called for short) Cirrus engine. He left Croydon at 04.56 hrs., and reached Zurich at 11.00 hrs. He left again at 11.45 hrs., and reached Croydon at 19.30 hrs. Mr. Cobham's speed on the outward journey works out at 82 m.p.h., and the homeward trip was made at an average of 64 m.p.h.

Mr. Cobham's flight was done, as he told one before the start, to "get the public," and as a piece of propaganda it was excellent, especially as it was shared by all the papers, and not made, as are so many of Mr. Cobham's yarns, exclusive to a single paper.

In all that publicity there were bound to be a few errors. For instance, it was not, as was freely stated, the first return flight between London and Zurich in the day. Mr. Rogers performed that feat some time ago on the ordinary daily service without knowing he was going to do it beforehand. Also it was not the longest non-stop flight in a light aeroplane. Mr. Bert Hinkler, in 1920, flew non-stop from Croydon to Turin, which is 700 miles, and the following year he flew from Sidney to Bundaburg, in Australia, a distance of 800 miles non-stop. Both these feats were done in a Baby Avro with a 35 h.p. Green engine. The Green is lighter and develops less horse power than the Cirrus, though its cylinder capacity is some 10 per cent. greater, and so the machine can claim to be a light aeroplane of the Moth class.

One wishes that the daily papers would boom other good flights the same as they do those of Mr. Cobham. Mr. Cobham realises that before the public can be made to take up flying they have got to be educated in the safety, ease and utility of flying. Many people object to publicity, but Mr. Cobham does not. Therefore he is setting out to educate the public and when the public starts to travel by air and to buy light aeroplanes much of the credit for having induced them to do so will belong rightly to Mr. Cobham. His valuable work will always be recognised in this paper, and at the same time his equally valuable leg will always be pulled.—G. D.

THE GLOBE TROTTERS.

Rome—Melbourne.

The Marchese di Pinedo, who is attempting to fly from Rome to Tokio via Melbourne, left Rangoon and arrived at Singapore on May 25.

On May 27 he arrived at Surabaya, Java, and on the following day arrived at Sumbawa Island, Dutch East Indies.

On May 29 he continued his meteoric dash and arrived at Koepang, Timor Island.

On May 31 he arrived at Broome, Western Australia, having covered the 750 miles from Koepang in 6 hours. This completes the first stage of the flight to the Far East.

The Marchese di Pinedo, accompanied by his assistant, Campanelli, left Sesto Calende on a Savoia 16 ter flying boat (400 h.p. Lorraine-Diétrich engine), on Apr. 21, and by carrying out his programme of halting no longer than one day at each stage has reached Australia in 40 days and 20 flying stages.

The occasion of his arrival in Australia has been the signal for the exchange of congratulatory messages between the Commonwealth Prime Minister, Mr. S. M. Bruce, M.C., and Signor Mussolini.

On June 1 a departure was made for Melbourne. The route will be via Port Hedland, Onslow, Carnarvon, Fremantle, Albany, Israelite Bay, Port Eyre, and Adelaide. He is proposing to stay in Melbourne for three weeks in order to make a complete overhaul of his machine. Afterwards the Marchese die Pinedo is proceeding via Sydney, Brisbane, North Queensland, Thursday Island, New Guinea to Tokio. After spending a month in Tokio he intends to return to Italy via Northern India.

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AIRCRAFT DEVELOPMENT POLICY FOR MILITARY PURPOSES.

By W. H. SAYERS.

In a recent issue of this paper the various aspects of the problems of aircraft production in the event of war were considered in outline under the implied assumption that no very enormous change in the present type of aircraft had to be considered as intervening. It has always however to be remembered that in the present state of aircraft development there is always some possibility that a type of aircraft may suddenly be produced which will render existing types obsolete and ineffective for military purposes. In the matter of naval warfare—which is of much older standing than air warfare—this has actually happened twice almost within the memory of man.

The introduction of the ironclad ship of war really meant the production of a type invulnerable to attack by previous ships and therefore capable of destroying such ships at its leisure. The introduction of the Dreadnought type of battleship by this country rendered practically all previous battleships obsolete—and it is well known that but for the Dreadnought, British naval supremacy in regard to capital ships at the outbreak of the last war would have been even more overwhelming than it actually was.

Developments that are Possible.

Now a development in regard to aircraft of a nature similar to that of the production of the Dreadnought battleship is by no means unthinkable. Such a development might arise in more ways than one. For instance a really great improvement in power plant for aeroplanes might render effective armouring of the machine compatible with an excellent all-round performance and a considerable carrying capacity. Thus a belligerent which possessed the improved power plant might put into the air long-range bombers which could not successfully be attacked by any enemy machine, which was not equally effectively armoured, and which would need an approximately equally improved power plant to carry that armour.

Alternatively, a great development in the offensive powers of aircraft may occur. Shooting at a small target moving at over 100 m.p.h. from a relatively unsteady gun-platform moving at a similar speed with a small-calibre gun, is not—cannot be—a particularly accurate performance. If it were, air warfare would last but a very short time. On the other hand, aircraft are essentially fragile structures, and do not require the expenditure of a colossal amount of energy to accomplish their destruction. It is possible to sink a ship by exploding a sufficient charge, not on or in contact with the ship itself, but in the water in which that ship floats, and within a reasonable distance of the ship itself. In the same way an aeroplane can certainly be wrecked by exploding a much smaller charge within a quite appreciable radius of the machine.

Guns capable of firing shells of sufficient size to effect destruction without a direct hit can scarcely be mounted on aeroplanes—but the gun, after all, is not the only appliance by which explosive missiles may be directed—and it is by no means impossible that methods may be devised whereby an aeroplane will be enabled to blast an opposing machine out of the air at a range of half-a-mile, or more.

What May Happen.

What is going to happen in case of war if one belligerent suddenly produces a number of aircraft of overwhelming offensive powers? What would have happened at Trafalgar if the French had suddenly produced one steam-driven ironclad? The answer generally given is that things never happen in that way—and there is some truth in the suggestion. There are few classes so conservative and so distrustful of novel technical developments as those whose business it is to direct military policies. They are loth to commit themselves to new arms and equipment except after an extensive period of trial, during which period perfect secrecy is generally impossible, and the enemy accordingly has his chance of devising counter-measures.

Nevertheless there is always the possibility of some such thing happening—and the possibility is one which should be borne in mind in considering the aerial policy of this nation. Wars have not infrequently been decided by the accomplishment, by one side, of what the opposing side had considered to be an impossibility. And the commission of that impossibility need not necessarily occur with remarkable suddenness or lack of warning. As an instance it may be said that in German military circles in 1914 it was regarded as an impossibility for Britain to place in the field an army of sufficient size and efficiency seriously to affect the course of the war which was then about to open. Britain succeeded in placing a very large and very effective army in the field, and despite the fact that a very considerable period was occupied in the process, her achievement of this impossibility may be regarded as at least one of the decisive events of the war.

Without inquiring in any detail as to the nature of the possible new factors which may be found to enter into the next war in the air, it is sufficient for the present merely to recognise that it is possible that at some period an unforeseen and unexpected development may arise which will effectively render the existing aircraft of one side or another obsolete.

How will such an event affect the problems of aircraft supply, particularly in the case in which that new development is brought to bear against us?

Obviously a great deal depends on the precise circumstances at the time. In any event it is likely to require a complete revision of any aircraft production programme which has been drawn up in ignorance of the particular development which actually has to be faced. And the more deeply committed we may happen to be at the time to a programme of production on an enormous scale, the more difficult it is going to be to revise that programme.

Thus, generally speaking, the earlier in the period of hostilities the new factor reveals itself, the easier it should be to arrest the original programme of construction and to revise it to meet the new conditions.

The Worst Defect of British Air Policy.

This brings to light the most serious defect of the British Air Policy—that of maintaining a nucleus Air Force, organised mainly for defensive purposes, and trusting that it will be possible to maintain our defence during a period sufficient to permit of the building up of forces capable of offence and victory.

Practically that means that we must adopt a policy of enormously expanded production—which to be successful must mean standardisation of the types of aircraft, engines and equipment to be produced, and a very complicated and relatively inelastic organisation for manufacture, which will render it extremely difficult rapidly to change the type of aircraft, engine, or armament, which may be demanded to meet a new and overwhelming enemy development in one or another of these matters.

Obviously the best hope for the safety of this country lies in the adoption of a policy in the air which we formerly adopted in regard to the Navy—that of maintaining a force overwhelmingly superior to that which can be put up against us. Unfortunately for the aircraft industry the taxpayers of this country are not at present prepared to face the cost of such a policy.

How to Guard Against It.

But as the policy of expansion from a nucleus force is at present the only one possible it is quite obvious that in the first place it is of the very first importance that this country should keep ahead of its rivals in the experimental development of novel types of aircraft in order to reduce the chances that we shall be surprised by unexpected advances of a technical nature made by the enemy.

And secondly it is eminently desirable that every effort should be made by the Government to strengthen the position of the regular Aircraft Industry and to encourage it to seek for the widest possible market for its goods.

Thirdly it should be the aim of the Government to lay its plans for the mass production of standard aircraft in such a way that the regular aircraft designing firms shall be left as nearly as possible independent of external supplies and operations as is possible.

This is desirable in order that during the earlier stages of hostilities they may be enabled to produce their own types of aircraft as rapidly as possible during the period required for the mass-production scheme to get into its stride, and also so that when the mass production has been started there shall be available a series of complete technical staffs and manufacturing organisations that can rapidly be turned on to designing and producing new types of aircraft and engines which may be urgently needed to meet unforeseen conditions.

With regard to the second item—that of widening the market for British aircraft—there is a good deal to be done. Of course, many of those in authority have paid lip service to the desirability of encouraging the development of markets other than that provided by the R.A.F. It is even probable that the majority of them have done what seemed to them the best they could towards attaining this end. However, it has to be recognised that civil aviation and light aeroplane clubs are not likely to afford any field for a marked expansion of the output of British aeroplanes for some considerable time to come.

Moreover, in this country at any rate, they never will afford any important market, for, as long as civil aviation remains red-tape-bound by the present system of official control. Excellent as the intentions of the Air Ministry probably are, and hard-working as many of the individual members of its staff may be, the fact remains that any and



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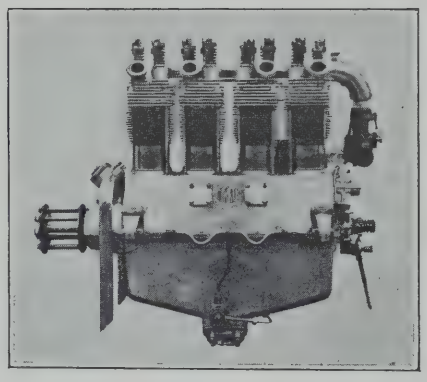
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every proposal which may be entertained for the development of aviation in this country, has to pass through the bottle-neck of the Ministry before anything can be done towards making it effective. Quite apart from the fact that a large number of enterprises which must be attempted in the process of putting civil aviation on a sound commercial basis must necessarily be of a speculative nature not likely to commend itself to an institution whose motto is avowedly "Safety First," the Ministry has not and cannot possibly have a staff adequate to deal with an extensive civilian Air Transport Industry along the lines of detailed technical inspection now in force.

Even to-day the Air Ministry staff available for the checking of certain technical requirements necessary before any aircraft may take the air is smaller in number than the staff employed by one single constructing firm to check these same details before the designs are submitted, and as a result delay in passing designs is unavoidable. What would happen if a really large number of new designs were to be called for immediately Heaven only knows. Imagine the attitude of H.M. Treasury towards a demand from the Air Ministry for a five-fold increase in its technical staff—not to mention the clamour of the popular Press. And in this instance the Treasury and the Press would be right, for the right policy for the Ministry to adopt is to leave civil aviation to find its own feet with the aid of private enterprise.

Where are the Markets?

Apart from possible developments in the demand for civil aircraft, what other markets are there which might be exploited by the British Aircraft Industry?

With the exception of ourselves and Germany, the whole of Europe, and some part of the rest of the world, is busily engaged in building up as formidable Air Forces as it can procure. In the gross these foreign Air Forces represent a demand for aircraft on a very much larger scale than that of the British Air Force, and certain foreign Aircraft Industries are doing extraordinarily well out of supplying them. They have been largely helped in this by the support of their own Governments, who have recognised the advantage to themselves in the event of war of the possession of an aircraft industry on a larger scale than could be supported by their own peace-time demand for aircraft.

Why have we not pursued a similar policy? The answer is that British policy has generally regarded all foreign military forces as possible future enemies, and has therefore considered that the supply of arms of war to any Foreign Power, friendly or otherwise, should in general be discouraged except to the extent to which that supply was consonant with the said Power's reasonable defensive requirements. Prior to the war, when Britain was practically an exclusively Naval Power and possessed an overwhelming Navy, there was perhaps something to be said for this policy. Now conditions are widely changed, particularly in regard to Air Power.

In the air we have no superiority to a possible enemy combination, and in the event of war a strong aircraft industry will be of enormous value to us. If our own aircraft manufacturers do not supply foreign Powers, those of other nations will, and our enemies will not be seriously weakened by our refusal to supply them.

Supply our Possible Enemies.

There are in fact certain very good reasons why we should encourage the supply of British aircraft rather to our probable enemies than to our certain friends. If we build up an enlarged industry on the demand of our friends, that demand will not cease—will rather increase—with the outbreak of war, and so will be added to our increased demand.

If, on the other, we can succeed in supplying our future enemies in peace time, on the outbreak of war the whole of the industries' capacity normally employed in meeting their demand would be at once available to us, and they themselves will be deprived of one of their normal sources of supply. Therefore to supply one of our possible enemies with a large proportion of his normal demand for aircraft is to provide him with one inducement to keep the peace.

Moreover, for so long as that potential enemy is content to accept British military aircraft in fairly large numbers we have the practical certainty that he has no source for the supply of considerably superior equipment. In other words, as long as he is content to take British supplies we know that he has nothing "up his sleeve" in the shape of much better aircraft than we can produce.

After all Germany is not altogether devoid of sense. As a nation she has now and is likely for many years to come to stand in greater danger from Russian aggression than any other nation on earth. She is not permitted to organise any adequate defence against such aggression, but she is doing the next best thing—that is she is allowing her own engineers to take a large share in the organising of Russian manufacture of warlike stores and her own ex-officers to do a good deal towards the training of the Russian Army. As a result Germany knows—what probably no one else knows with equal accuracy—precisely how the Russian supply services are likely to fail when deprived of external advice and assistance, and exactly what she will have to meet in the way of attack if Russia does commence warlike operations.

And, moreover, she will have available all the technical data and the experience of aircraft design and construction to enable her to organise a really serious resistance in the shortest possible time.

As we are by our present policy condemned to maintain an Air Force on a scale so inadequate that compared to a possible enemy combination against us we should be nearly as completely disarmed as Germany is relatively to Russia, it does not seem unreasonable to suggest that we should follow the German example in this matter, and do everything we can to sell British Aircraft to foreign Powers—particularly to those likely to want to use them against us.

The Institution of Aeronautical Engineers.

The Seventh Annual Meeting of the Institution of Aeronautical Engineers will be held at the Engineers' Club, Coventry Street, London, W.1, at 6.30 p.m., on Wednesday, June 10. The agenda will consist of the Chairman's speech, presentation of the Annual Report and balance-sheet, and the election of the Council for 1925.

The meeting will be followed at 7 p.m. by an Extraordinary meeting to consider and, if thought fit, to pass the following resolutions:—

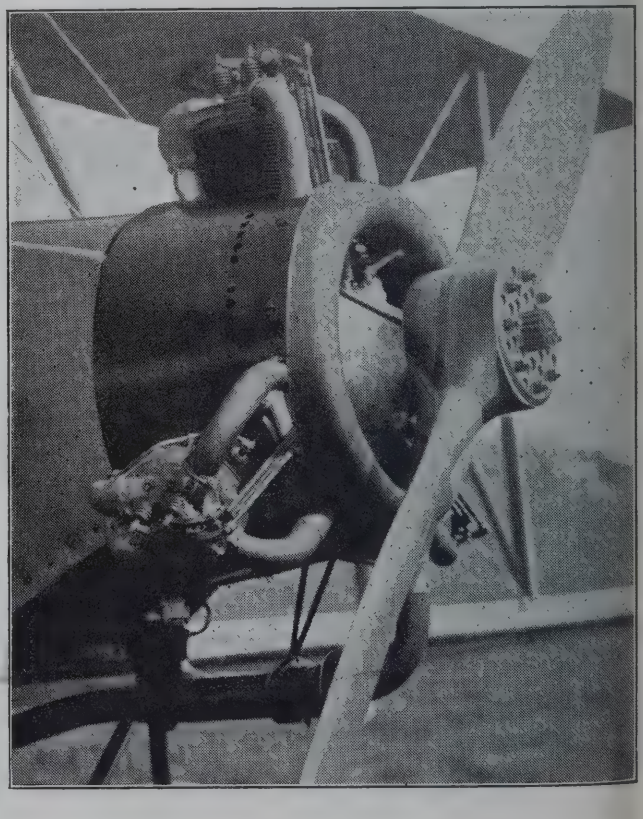
That the objects of this Institution be extended by the addition of the following clauses:—

(1) To amalgamate with any other Society or Institution having objects wholly or partly similar to the Institution.

(2) That an agreement with the Royal Aeronautical Society . . . be entered into by the members of this Institution and that the Council of the Institution are hereby empowered to carry the same into effect.

[Members of the Institution will realise the importance of this meeting. The I.Ae.E., in common with the Royal Aeronautical Society, has not found it at all simple to meet its necessary expenses during the past few years, and as a result the proposal has been made that the two Societies should be amalgamated in order to produce one Aeronautical Society in a reasonably stable financial position rather than two of them in an unsatisfactory condition.

Members of the Institution have therefore to decide at the forthcoming meeting whether that body shall continue in existence as a separate entity or shall merge itself with the R.Ae.S. On the whole the proposed amalgamation seems to be indicated as the best practical way out of the difficulties now facing both bodies, but the fusion—if it occurs—will not be without regrettable aspects.—W. H. S.]



The photograph here reproduced shows the mounting of a Bristol Lucifer engine in a Caspar machine for the Deutsch Rundflug.



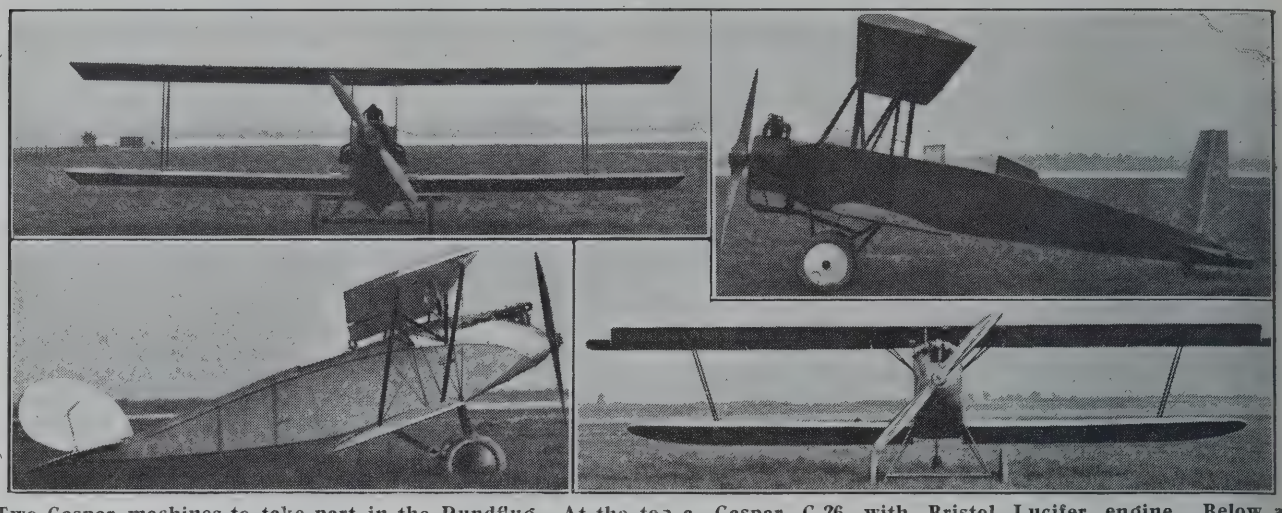
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



Two Caspar machines to take part in the Rundflug. At the top a Caspar C.26 with Bristol Lucifer engine. Below a Caspar-Theis with 100 h.p. Mercedes.

Exit the Cheaplane.

The following letter should be of interest to those concerned with what are now called Light Aeroplanes :—

Sir,—I wish to remark upon the above topic, as distinct from light-planes. A few points occur to me in support of this cherished dream.

Is it not a fact that the cheaper an article is the greater will be the sale, provided of course it functions reasonably well and is finished in true British style?

Further, does not rapid alteration in design hinder production, and especially cheap production, besides unsettling the mind of the purchaser?

Are light-planes exempt from this law?

One might demand why these principles in economics are not being applied to light-planes.

Everything is sacrificed to performance and to competition work, and little thought is given to utility. True there are exceptions in which it is interesting to note that the Cranwell light aeroplane figures largely.

In marketing a new article one naturally wishes it to have a definite use from which to gauge the potential capital ready to purchase it. Unfortunately it is impossible to do this for light-planes, therefore it is an occasion for "canniness" but not for "ca'-canniness."

The width of the market which could absorb planes at £550 is very limited (let us say, 1,000 for the Empire), while the width at £300 is very probably 100 times as great, i.e., 100,000. Why paint the lily, and place it beyond our financial means? This is being done to light planes. They are improving beyond sale.

Since the question is one of £ s. d., what effect will the innovation of a 170-lb. maximum engine weight limit have upon sales?

It is not an extreme view to hold, in saying that, for competition work, the 1926 light-plane engines will develop 100 h.p. and over.

No one requires a utility plane of this type, to say nothing of the price and fuel consumption.

Coming to the second point, that of multifarious changes of design, which automatically force antiquity upon machines even a month old. Since all experimental work is a capital expenditure, it is necessary to carry it upon future products, while each overhead charge detracts from the 100,000 potential purchasers, who are unwittingly accumulating a heavy account.

Experimental expenditure is most assuredly necessary, provided that articles of the type have established a market, and sales are being made.

In Germany a market was established by the glider movement. It was possible by gauging the interest in gliders to manufacture small aeroplanes confidently.

While we have no gliders we have several thousand sportsmen on motor-cycles and light sports cars, who, at a price, could purchase light planes and establish a market, and on the conclusions drawn from those aeroplanes in service the ground for experimental work can be placed.

A point which aggravates me is the large amount of expenses in the shape of regulations, journey logs, fees and what not. Can anyone give me the total cost of owning a machine when one resides in a town, and must license a suitable field near at hand, exclusive of rent, which, of course, is a variable?

One cannot but foresee that, until 1927 at least or until someone in the Industry, forgetting competitions, designs a utility aeroplane, the "Cheaplane" remains, sad to relate, a cherished dream, while the dream of sales at £550 remains a nightmare!

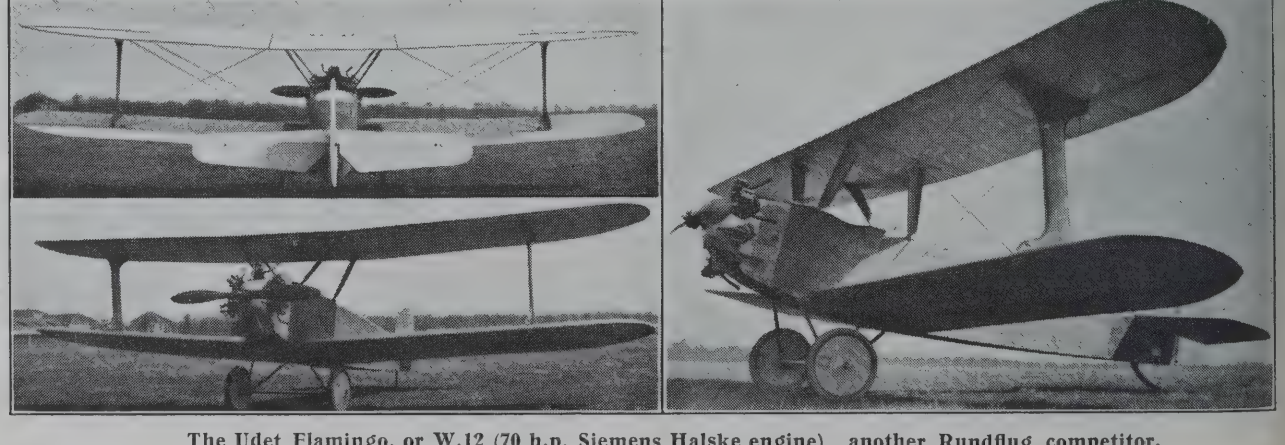
Let me visualise a Cheaplane.—Fuselage of welded steel tube. A high or low wing cantilever and folding monoplane. Power unit of 35 h.p. at 1,700 r.p.m., with 40 per cent. excess for emergencies. A total loaded weight of about 900 lbs. And sold at £300.

Perhaps the sordid word Cheaplane will rankle. But a Light-Plane is not, and for years to come cannot be, a Cheaplane. Hence the sordidly discriminating phrase.

(Signed) R. Grechan Carr.

[Purely as a manufacturing proposition the Cheaplane is perfectly possible. Two things only are needed to place it on the market. One is the individual or firm with enough capital to put a cheap machine on the market and to wait for a year or two before it sees any return on its preliminary outlay and with enough faith in the future of flying to be ready to undertake the job.

The other thing essential is the suppression of all Ministry control over all that is involved in flying.—W. H. S.]



The Udet Flamingo, or W.12 (70 h.p. Siemens Halske engine), another Rundflug competitor.


LEONARD BRIDGMAN 1924
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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 21; Tuesday, 23; Wednesday, 2; Thursday, 26; Friday, 26; Saturday, 24; Sunday, 13.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 76, passengers 352, freight 7 tons.

AIR UNION:
Paris—London: Machines 40, passengers 154, freight 8 tons.

K.L.M.:
Amsterdam—Rotterdam—London: Machines 10, passengers 47.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES:

DE HAVILLAND AIRCRAFT CO. LTD.:
Machines 6, passengers 3.

AIRCRAFT DISPOSAL CO. LTD.:
1 D.H.9 delivered to Lisbon.

Total number of trips by British machines: 85, carrying 355 passengers. Foreign machines: 50, carrying 201 passengers.

Comparative Figures:

For week ending May 31:
Machines, 135; Passengers, 555; Crews, 173; Total personnel, 728.

Corresponding week, 1924:
Machines, 82; Passengers, 321; Crews, 130; Total personnel, 451.

Corresponding week, 1923:
Machines, 103; Passengers, 285; Crews, 168; Total personnel, 453.

Corresponding week, 1922:
Machines, 150; Passengers, 339; Crews, 207; Total personnel, 546.

Corresponding week, 1921:
Machines, 85; Passengers, 339; Crews, 101; Total personnel, 440.

Corresponding week, 1920:
Machines, 89; Passengers, 126; Crews, 100; Total personnel, 226.

Croydon Notes.

There has been something of a little boom in the passenger traffic as the result of the Whitsun holidays, and most of the machines were carrying full loads, including the Editor of THE AEROPLANE, who has broken his vow as to non-diving-landing-at-no-miles-an-hour-for-me machines. The next thing we shall hear about him is that he has taken up golf and bridge, to the detriment of his terpsichory. He has gone to Germany to watch the Rundflug, and so he cannot interfere with these notes as usual. So far, the only news received from him is that he arrived in Berlin five hours late owing to engine failure. That ought to "learn" him one way or another. But anyway, he is normally five hours late for most things, so what does it matter.

Mr. Alan Cobham emulated Mr. Roger's feat of flying to Zurich and back in the day, last Friday. Mr. Rogers did not, of course, get so much publicity, but both flights were exceedingly good. Mr. Rogers had a bigger and heavier machine, and so, possibly, his was the more arduous.

Mr. Perry started on Tuesday for Lisbon on a D.H.9, which he was delivering there on behalf of the Aircraft Disposal Company.

The Surrey Flying Services have adopted a sky-blue doping scheme for their machines which gives them a very attractive appearance, which, for joyriding, should be a great asset.

The old and ancient o/400, the last of the line of commercial o/400s, is now, in this year of grace 1925, in the hands of the housebreakers, and by the time this issue is in print, will be numbered among the dear departed. After long and faithful service on the air lines she was turned out to grass when Imperial Airways was formed. The recent cold winds proved too much for her. For some time she has been sinking steadily, and last week she passed peacefully away on the scene of her former triumphs. One hopes that she will be left in peace and not be dragged out and rebuilt when there is a shortage of machines.

Last week Mr. Barnard took a D.H.34 to Manchester with a special passenger. He had to be informed by wireless *en route* at which aerodrome there he was to land, owing to there not being sufficient time available before starting to find out by telephone the condition of the Woodford and other aerodromes there.—G. D.

The South African Air Mail Service.

The Cape Town—Durban Air Mail Service, which was run experimentally during March, April and May by the South African Air Force, is to be discontinued after the trip connecting with the British Mail Steamer which left England for Cape Town on May 29.

The Schneider Trophy Competition.

The following notice has been issued by the National Aeronautic Association of the U.S.A., whose offices are at 1623 H Street N. W., Washington, D.C.:—

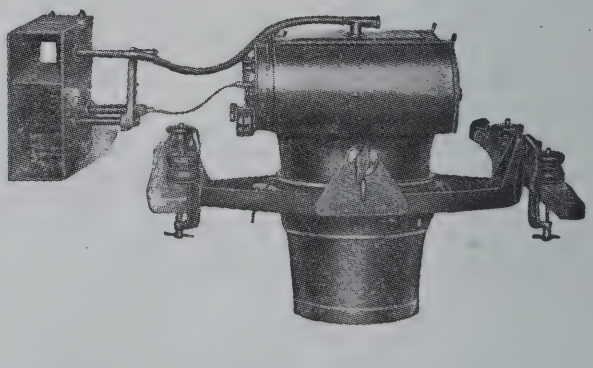
GENERAL CONDITIONS FOR 1925.

Article 1. Clubs entering machines must deposit, in addition to the entry fee laid down in the General Regulations, a sum of 5,000 francs (French) for each machine, as a guarantee of its being present. Entries close Apr. 1, 1925.

Machines, fully erected, must be submitted to the Contest Committee at a place to be designated not later than 10 a.m. on the day preceding the navigability and watertightness test. The deposit of

Eastman Aero Camera
Model K1
for Topographical Work

The Eastman Aero Camera (Model K1) is entirely automatic in action. Driving power is provided by a wind motor containing a rotary paddle wheel, with a lever control, which also regulates intervals between exposures. Any number of exposures—size $9\frac{1}{2}$ ins. x $7\frac{1}{16}$ ins. (18 x 24 cm.)—up to 100 can be made on one 75 ft. roll of Eastman Daylight Loading Film. The film is held flat by the constant suction caused by the Venturi tube. Shutter speeds can be varied at will from 1/90 to 1/310th of a second. Fitted with either 12 in. or 20 in. f4.5 lens.



Further particulars post free on application to

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THE 17,000 MILES FLIGHT.

"Trifles" That Loom Large in the Success.

PALMER
Cord Tyres

"Reference must be made to one or two other trifling trifles, more directly connected with the machine itself. For instance, during this 17,000 mile flight there *were* certain occasions when they had to land on *terra firma* and take off again. This is where the Palmer Aero tyres did their little bit—and they did it very well too. Many of the aerodromes were—well, somewhat rough and hard, while others consisted (wholly or in part) of the very best mud. In either case the tyres stood up splendidly, and the special shape of tread prevented the machine from sinking into the soft places and turning turtle. In addition, the tyres put in some 50 miles' work on rough roads (when transporting the machine to suitable taking-off grounds), while, except for the small quantity of Baghdad air, the air in them was the same from start to finish."

"Flight," 26th March, 1925.



The Palmer Aero Wheel and Tyre as fitted to the D.H 50. The tyres are of the broad tread pattern, a type introduced by Palmer during the war. They are specially designed to facilitate landing on soft ground.

STANDARD SIZES OF PALMER LANDING WHEELS AND TYRES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m
375×55	168	111.12	25.4	Central
300×60	16	111.12	25.4	Central
„	17	72.39	12.7	Central
450×60	30	89.	31.75	Central
„	138	130.	38.09	Central
575×60	21	160.	28.	Central
„	34	150.	31.75	104/46
„	111	150.	38.09	104/46
600×75	21	160.	28.	Central
„	34	150.	31.75	104/46
„	111	150.	38.09	104/46
700×75	78	178.	44.45	132/46
„	79	178.	44.45	Central
„	100	178.	38.09	132/46
„	101	178.	31.75	132/46
700×100	77	178.	44.45	132/46
„	92	185.	55.	135/50
„	95	185.	55.	Central
„	96	178.	55.	132/46
700×100	99	178.	38.89	132/46
„	112	150.	38.09	Central
650×125	119	178.	55.	132/46
„	147	178.	55.	Central
750×125	77	178.	44.45	132/46
„	92	185.	55.	135/50
„	95	185.	55.	Central
„	96	178.	55.	132/46
„	99	178.	38.89	132/46
„	112	150.	38.09	Central
800×150	82	185.	55.	135/50
„	85	185.	55.	Central
„	161*	185.	55.	135/50
„	163*	185.	66.67	135/50
„	169†	185.	55.	135/50
„	211*	185.	60.32	135/50
1000×150	131	220.	66.67	Central
„	150	185.	55.	Central
„	167	185.	55.	125/60
„	174	250.	80.	Central
1000×150	201	185.	60.32	125/60
„	210	185.	60.32	Central
1000×180	148	220.	80.	Central
„	149	185.	55.	Central
„	155	220.	66.67	Central
„	166	185.	55.	125/60
900×200	107	185.	55.	Central
„	108	185.	55.	125/60
„	128	220.	66.67	Central
„	137	250.	80.	Central
„	202	185.	60.32	Central
1100×220	134	220.	66.67	Central
„	136	250.	80.	Central
1250×250	133	250.	80.	Central
„	154	304.8	101.6	Central
1500×300	115	304.8	101.6	Central
„	126	304.8	152.4	Central
1750×300	139	400.	152.4	Central

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
†Wheel No. 169 is fitted with Ball Bearings.

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PARIS 31, Rue la Boétie.

NK (304)

5,000 francs per machine will be returned in respect of all machines submitted as above.

NAVIGABILITY AND WATERTIGHTNESS TEST.

Article 2. This eliminating trial will begin October 23, 1925, with a navigability test followed by a watertightness test. These two tests are intended to establish the seaworthiness of the machine.

Article 3. Each machine must complete a course of from 5 to 10 nautical miles over the sea, or in a creek, gulf, estuary, or bay, as decided by the Contest Committee.

For this test the pilot must taxi over the starting line, then rise and continue the course, during which he must taxi the machine over two distances of one-half a nautical mile at a minimum speed of 12 knots, the limits of each of these distances being indicated by two buoys.

The remainder of the course will be covered in flight.

The pilot must, however, alight again before completing the course and taxi over the finishing line.

The Contest Committee may allow a pilot who has been unsuccessful in this test to make a second and final attempt, after all pilots have had a first attempt.

Article 4. After having taxied over the finishing line, the machine must be moored immediately to a buoy allotted beforehand, where it must remain afloat for six hours without anyone on board.

Any machine leaving its moorings during this period will be disqualified.

Article 5. No repairs will be allowed during the navagibility and watertightness tests. Except for changing the propeller, which is allowed, the machine must not undergo any modification between the above tests and the speed contest. It will be stamped or sealed to ensure this.

SPEED CONTEST.

The 1925 Jacques Schneider Cup Race will be held at Bay Shore Park, Baltimore, Md., and will be contested over a distance of 350 kilometres (188.86 nautical miles).

The closed circuit will be 50 kilometres (26.98 nautical miles).

The speed contest will take place on Oct. 24, 1925.

Planes may be started all together or at intervals, as shall be decided by the Contest Committee.

If the planes are started at intervals the order of starting shall be drawn by lot and the hour of starting fixed by the Contest Committee.

The starting line must be crossed on the water at which time there must be contact between the water and the principal float or floats supporting the machine. The finish line must be crossed in flight.

Planes must not leave the water until after crossing the starting line. Any plane so doing is subject to disqualification.

Starting time will be taken from the moment the starting signal is given by the official starter.

Pilots are at liberty to have the assistance of motor or row boats during a ten-minute period prior to the start, while in a reserved area, but all such boats must leave the reserved area immediately after the starting signal. No sinkers, buoys, sea anchors, or any similar devices may be used either by the pilots or their attendant craft.

Alightings during the Speed Contest are allowed.

Repairs are permitted but must be carried out by the crew on the water by means of what is on board without receiving any outside assistance. The machine may, however, anchor, moor, or manœuvre under its own power, but must not be beached.

Fuel replenishments are not allowed, except from stores carried on board.

On completing the course the pilots must submit their machines to the Contest Committee at a place to be designated for the checking of all stampings and any other procedure considered necessary by the Contest Committee, in order to ensure the carrying out of the General Regulations for 1925.

In the event of unfavourable weather the Contest Committee may postpone the contest as often as they think fit.

SUPPLEMENTARY.

Any infringement of the Rules for the Schneider Cup, the General Conditions for 1925, and Supplementary Regulations entails disqualification.

Any points not provided for will be decided in accordance with the Regulations of the F.A.I.

Each seaplane shall have a number assigned to it by the Contest Committee, which shall be painted on the bottom surface of the lower wing and on each side of the fuselage clear of the wing, in characters as large and clear as possible. It shall have no other numbering or lettering over twelve inches in height

Every person taking part in a sporting event of whatsoever nature is required:

"To know the present regulations (F.A.I. Rules) thoroughly." (2) "To agree to submit without restriction to the consequences that result therefrom." (F.A.I. Rules, Art. 9.)

A competitor, by entering, waives any right of action against the race committee for any damages sustained by him in consequence of any act or omission on the part of the officials of the race committee or their representatives, or servants, or other fellow-competitors.

The machine shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claims for injury either to himself or his passenger, or his machine, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the race committee in respect thereof.

Names of pilots and their alternates must be received at the office of the Contest Committee of the National Aeronautic Association, 1633 H Street N. W., Washington, D.C., U.S.A., not later than thirty days prior to the contest.

SHIPPING NOTICE.

Plane shipments should preferably be made to Flying Club of Baltimore via boats docking at Baltimore.

"The Three Hydrocarbons."

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title. It is an endeavour to explain to motorists in a light humorous fashion what are the three primary constituents of motor spirit. Everyone knows the variations in different qualities of coal, in water from different localities, and so forth, but very few motorists know what are the essential qualities of a well-balanced petrol.

The booklet, which is illustrated by some quaint and clever outline drawings, shows the influence of the three hydrocarbons, paraffin, naphthene, and aromatic, in a motor spirit, and convincingly establishes the claim that Shell is essentially the Well-Balanced Spirit.

Copies are sent, post free, on application to Shell-Mex Ltd., Publicity Dept., Shell Corner, Kingsway, London, W.C.2.

Nature Note.

Harold's "Plus-fours" this year are maroon in colour. A heavy toll in bird and plant life is feared. Crowborough and Penshurst have already suffered severely. General relief however is felt that he has not yet taken to Oxford bags.

PERSONAL NOTICES.

DEATHS.

BRUCE.—On May 25, at Spittlegate, as the result of a flying accident, George Edward Bruce, AC.1., No. 341626, R.A.F.

EVE.—On May 25, at Spittlegate, as the result of a flying accident, Jack Terence Eve, Plt. Off., No. 100 Sqdn., R.A.F.

Mr. Eve passed out of Cranwell on July 31, 1924, and was posted direct to No. 100 Sqdn.

LOWE.—On May 25, at Basrah Hospital, from post-operative exhaustion, Flt. Lt. Theodore Linley Lowe, No. 84 (Bombing) Sqdn., R.A.F., son of Col. and Mrs. T. E. Lowe, Wolverhampton.

Flt. Lt. Lowe was gazetted Plt. Off., R.A.F., in May, 1919, and promoted Flg. Off. in December of the same year. In 1921 he went from the School of T.T., Manston, to No. 100 Sqdn., then stationed at Clondalkin, Ireland. In November, 1921, he went to the C.F.S. for a course of instruction and was posted to Netheravon in February, 1922. He was promoted to the rank of Flt. Lt. in January, 1924, and joined No. 84 Sqdn. at Shaibah in September of that year.

Flt. Lt. Lowe played Rugger for the R.A.F. against the Navy and the Army in 1922 and was Captain of the Netheravon team which won the R.A.F. Rugby Union Challenge Cup in 1924.

WILSON.—On May 25, at Andover, while engaged in a practice parachute jump, Cpl. Sydney Ronald Wilson, No. 12 Sqdn., R.A.F.

FORTHCOMING MARRIAGE.

ROBERTS—CLARK.—The engagement is announced between Cyril Hubert Roberts, R.A.F. (late Argyll and Sutherland Highlanders), and Dorothy, the youngest daughter of Mr. and Mrs. Charles Clark, of Rushden, Northants.

BIRTHS.

ODDIE.—On May 29, at Larchgrove, Balerno, the wife of Flt. Lt. G. F. Oddie, D.S.C.—a son.

RAYNOR.—On May 21, at Barian, Goldington Road, Bedford, to Muriel Evelyn (*née* Shelton), wife of G. J. Raynor, late R.A.F.—a son (John).



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THE AEROPLANE

INCORPORATING AERONAUTICAL ENGINEERING

Edited by C. G. Grey

Vol. XXVIII. No. 23. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper.

A GERMAN ROUND-FLIER.



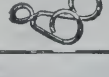
AN ANGLO-GERMAN ALLIANCE:—A Dornier Komet, with Rolls-Royce Engine, of the type which does most of the work on the Aero-Lloyd air-lines, which run practically all round Germany. The machine is an all-metal combination of channel steel and aluminium alloy plating and is as luxurious internally as a Pullman car.



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JUN 24 1925 UNIVERSITY OF ILLINOIS

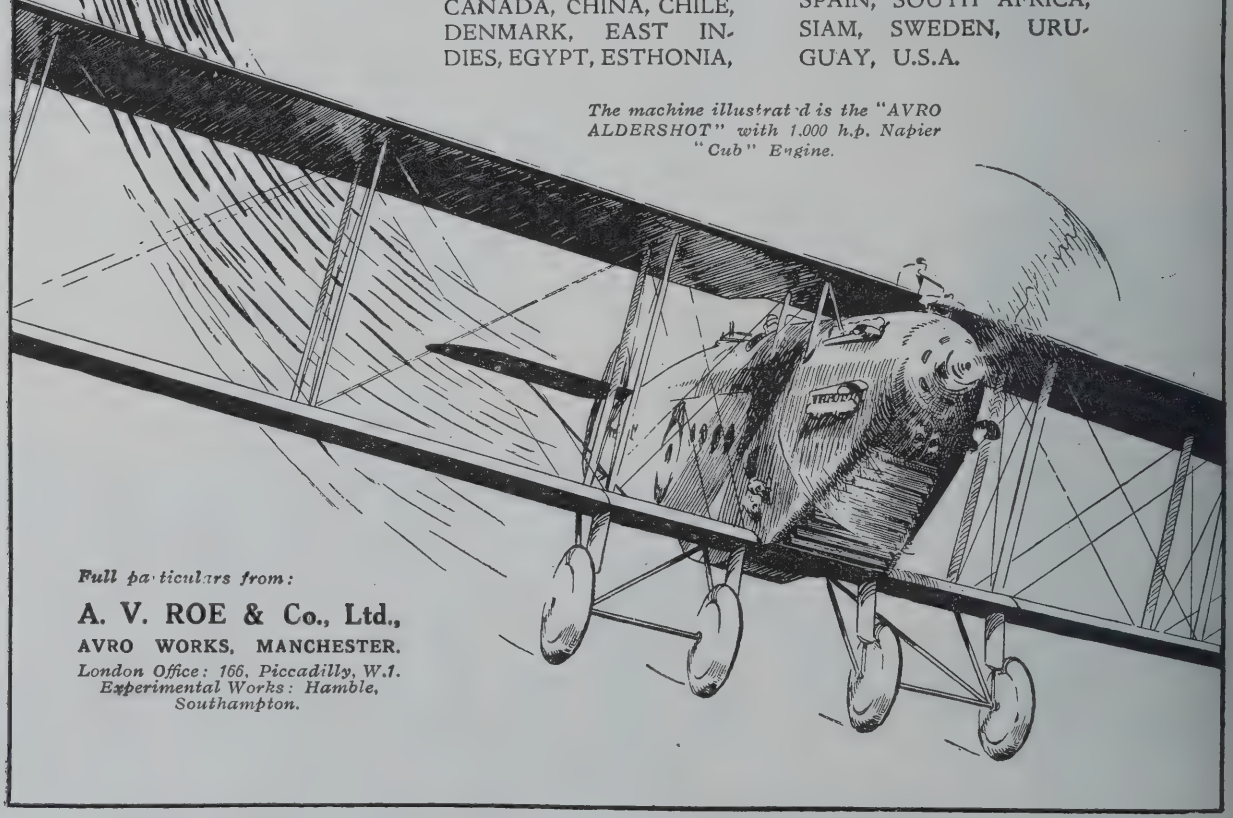
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The machine illustrated is the "AVRO ALDERSHOT" with 1.000 h.p. Napier "Cub" Engine.



Full particulars from:

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AVRO WORKS, MANCHESTER.
London Office: 166, Piccadilly, W.1.
Experimental Works: Hamble, Southampton.

JUNE 10, 1925.

THE AEROPLANE

VOL. XXVIII. No. 23.

Incorporating

Aeronautical Engineering

The Editorial Offices of "The Aeroplane" are at 175, Piccadilly, London, W.1.
Telegraphic Address: "Aileron, London." Telephone: Gerrard 5407.
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ON THE GERMAN RUNDFLUG.

Primarily this article is the fault of Major von Tschudi, he Secretary of the Aero Club von Deutschland, formerly Kaiserliche and Imperial, and of his friends, Captain and Mrs. Kropp. Some weeks ago Major von Tschudi wrote and said that one could not avoid coming to Germany to see the start of the Deutscher Rundflug. The term "Round-fly" is beautifully expressive and indicates exactly the nature of the competition,—a series of flights all round Germany. Major von Tschudi added that he and the Club and his friends insisted on one's presence, and that the Aero Lloyd offered free transport from Amsterdam to Berlin and back.

Consequently, in spite of being like Mr. Kipling's friend Hurree Chunder Mookerjee "a fearful man," one tensioned up one's small supply of courage and decided to go and return by air. And now one is eternally grateful to all one's friends in Germany for having taken such a decisive step, just as one is grateful to Lester D. Gardner for having compelled one to go to America last year. In each case one has received enlightenment which could not have been got in any other way.

All one's previous impressions, both about Germany and Air Transport, have been confirmed. But one has now the advantage of having seen from the very best possible inside or overhead point of view, those things which were previously only learned at second hand. And, as happened in one's visit to America, one's respect for the people of the country has been vastly increased. Also one has had the good fortune to make new friends with whose help one hopes to do better work for the progress of aviation in the future.

In this article one does not propose to give a detailed account of the Rundflug, either from the technical or from the purely flying point of view. The successful machines will be described in detail in future issues of THE AEROPLANE and the performances of the competitors will be published in proper form when the final results have been received from Germany. One merely proposes to give one's general impressions of the competition and of the splendid spirit which animates aviation in Germany. Also one proposes to give one's own personal impressions of air transport as at present practised, together with such suggestions as seem proper for the development of Commercial Aviation.

THE DUTIES OF A CRITIC.

Having accepted the kind offer of the Aero-Lloyd firm, which shares with the Junkers combine all the regular airline work in Germany, one made bold to ask Imperial Airways Ltd. whether they would care to take one to Amsterdam and back to join up with the Aero-Lloyd service, with which the Imperial Airways machines endeavour to run in conjunction. And Major Woods Humphery, the General Manager, kindly agreed.

Now here one meets with the first difficulty about this article. This difficulty arises over the age-old question as to what is the duty of a critic. There is a proverb that you should never look a gift horse in the mouth. And there arises again the story of the man who having been given a free pass to a theatre came out at the end of the first act and paid to go in again so that he could hiss with a clear conscience.

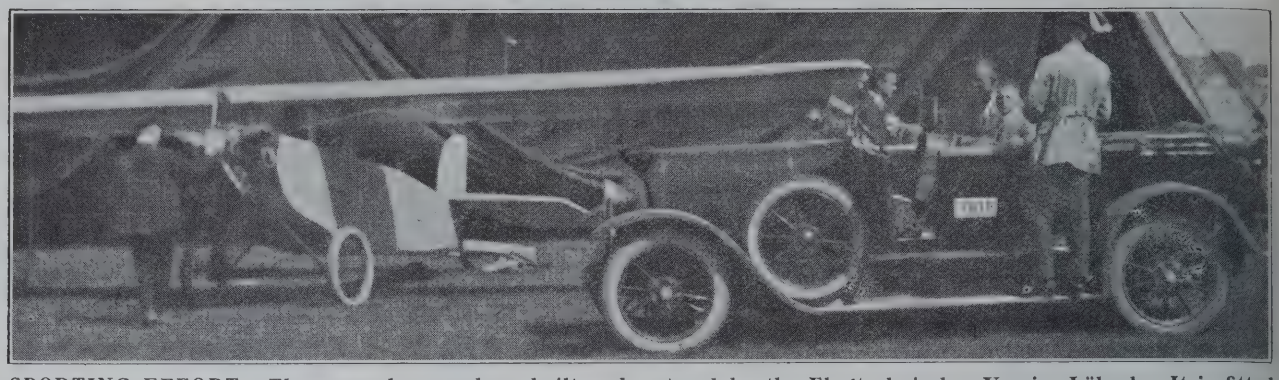
But that man presumably was an ordinary dead-head and not a professional critic. He only wanted to hiss to please



HE MOVING SPIRIT.—Major von Tschudi, the Secretary of the Aero Club von Deutschland and organiser of the Rundflug.



AS OTHERS SEE HIM.—Major von Tschudi as drawn by the artist of the "Berliner Automobil-Zeitung," who has caught his characteristically benign expression.



A SPORTING EFFORT.—The parasol monoplane built and entered by the Flugtechnischer Verein, Lübeck. It is fitted with a five-cylinder 55 h.p. Siemens engine.

himself and to satisfy his artistic taste. And unfortunately when a man is a professional critic his duty undoubtedly is to criticise even though it may go against his conscience.

For the matter of that one has no particular inclination to hiss, either at Imperial Airways Ltd., or at the Aero-Lloyd. All one wants to do is to give as sympathetically as possible a perfectly fair description of passenger transport by air as it is operated at present with such material as is available, and to make a few suggestions which one hopes may be helpful to those who are responsible for the future development of air transport.

In any case even the most unkind criticism of air transport in this paper is not likely to upset the equanimity of Imperial Airways Ltd. for one has been told quite definitely that in the opinion of the Directorate of Imperial Airways Ltd. The Aeroplane is not read by the general public. And if that be true, an opinion which personally one takes leave to dispute, no amount of adverse criticism in this paper can do any harm to our Million Pound Monopoly Company.

Outward Bound.

The machine allocated to the Amsterdam morning service on Friday, May 29, was the old Vickers Vimy with two Rolls-Royce Eagle VIII engines. She was built in 1919 and has been rebuilt on various occasions since then, so that there is not much of her original structure left. But her design has not been altered and she remains the same dear old tub that she has always been. Her worst fault is that she is slow, her cruising speed being about 80 miles an hour. But she is at any rate a really good flying machine.

All aeroplanes may be divided roughly into two classes, those which fly and those which are hauled through the air by the brute force of their engines. And the old Vimy does most empatically fly. Pilots say that in anything like rough weather they have to work pretty hard to keep their passengers from being air-sick, because with her short fuselage and comparatively short span of wing and rather high centre of gravity the old Vimy flicks about in response to every gust. But when one is watching the machine from the ground one can see that she is answering her controls properly all the time, and when one is inside the machine, one can feel that although she lifts to every gust she does go where her pilot wants to put her.

Also a pilot who knows the machine can land her at very nearly nothing an hour, which is a mighty consoling thought when one is flying across Holland where the country consists chiefly of patches of ground each apparently about the size of a rather ostentatious tombstone, with water-filled ditches in between. Also the Vimy has such a short undercarriage and is so pot-bellied that one has a comfortable sort of feeling that if she did trip over anything in landing she would merely wipe off her undercarriage and slide along on her stomach instead of standing on her head and then falling over onto her back.

Personally one is inclined to believe that the general lay-out of the Vimy comes about as near being right for a passenger-carrying aeroplane as is possible as present. She might have a better wing section, and certainly she could have a body shape which would make her a good deal faster and more efficient, and there are dozens of ways in which she could be cleaned up to give her more speed for the same power. But considering that she is six years old she was a very good effort in her day, and one would very much rather do the journey to Amsterdam or to Cologne in the Vimy than in any other machine owned by Imperial Airways Ltd. Mr. Rex Pierson certainly deserves credit for foresight in this early effort.

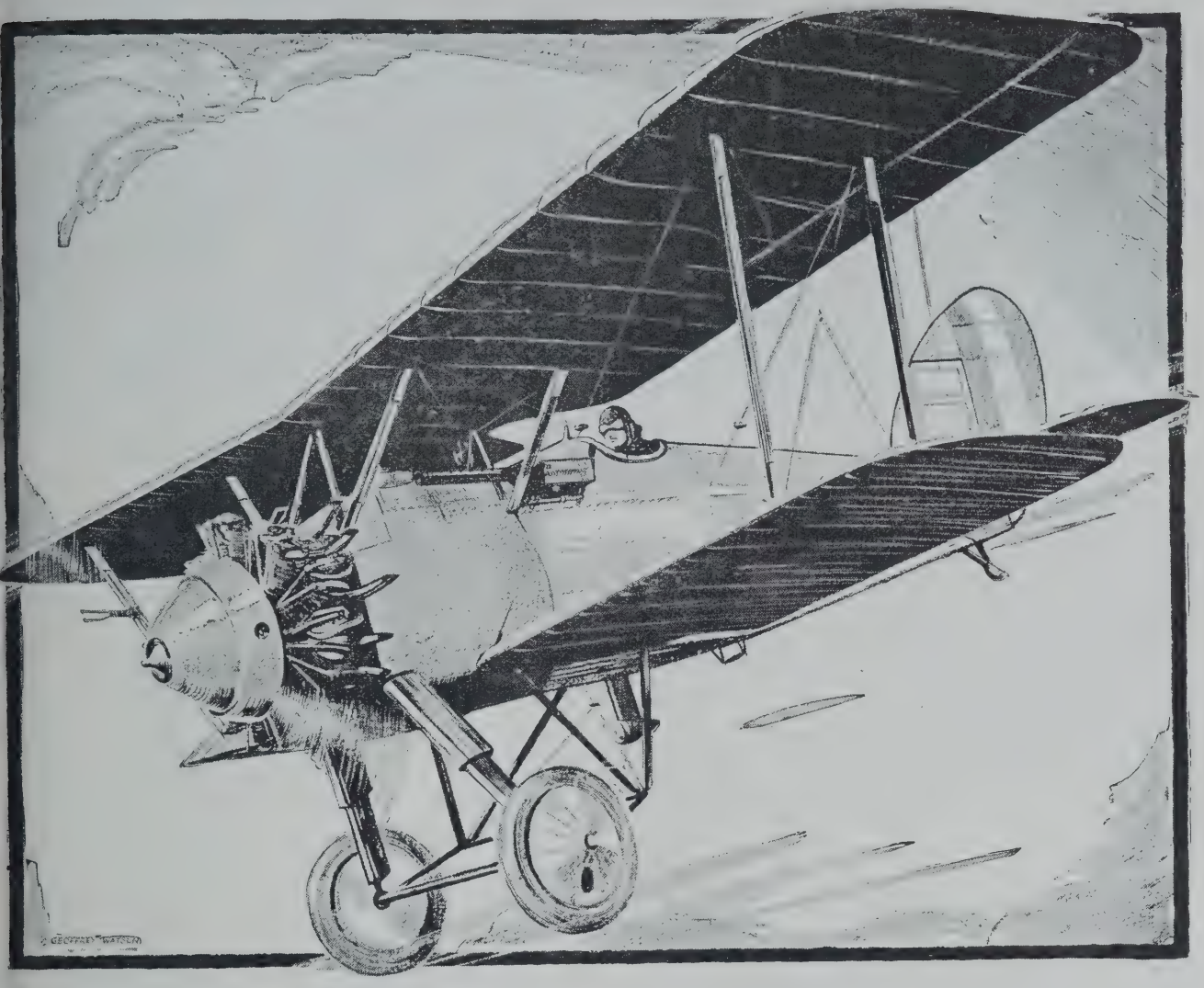
On that particular morning our pilot was Mr. R. H. Macintosh, which added very considerably to one's confidence. There is certainly no pilot flying in whose combined knowledge and judgment one has more confidence than in his. Also he is one of those kind people who consider the comfort of his passengers and works to keep his machine on an even keel instead of letting it flop about of its own free will while he merely keeps its nose on the right course.

So altogether one felt just about as happy as anyone can who knows enough about aircraft and their engines to be thoroughly mistrustful of them and does not know enough to tell from the inside of a cabin whether an engine is running properly or not, or whether when its note varies it does so because of the action of the pilot or because of some inherent devilment in the engine. The same engine sounds entirely different according to the type of machine to which it is fitted when heard from the interior of the machine. Consequently one needs a great deal of experience of different types to be able to tell from the passenger cabin whether the engines are running properly or not.

One had at any rate the satisfaction of feeling that on this particular journey one was no more than reasonably scared, because only a day or two before a very distinguished officer, formerly of the R.A.F., who had done an immense amount of flying during the War in France, in England and in South Africa, confessed to one that he had come back from Amsterdam the previous day and had for the first time travelled by air in a closed cabin. He said that he was pretty badly frightened the whole time and that every time the note of the engine varied, either through the pilot playing with the throttle or through the action of gusts as the machine ran into and out of them, he felt perfectly sure that the engine was going to fall to pieces or else was going to stop and let him down into the Channel.



SATURDAY PREPARATIONS.—A Caspar C.24 (100 h.p. Mercedes engine) flown by Dipl. Ing. Spiess, which crashed near Wurzberg on June 4. In the background is a Caspar C.T.2 (100 h.p. Mercedes engine).



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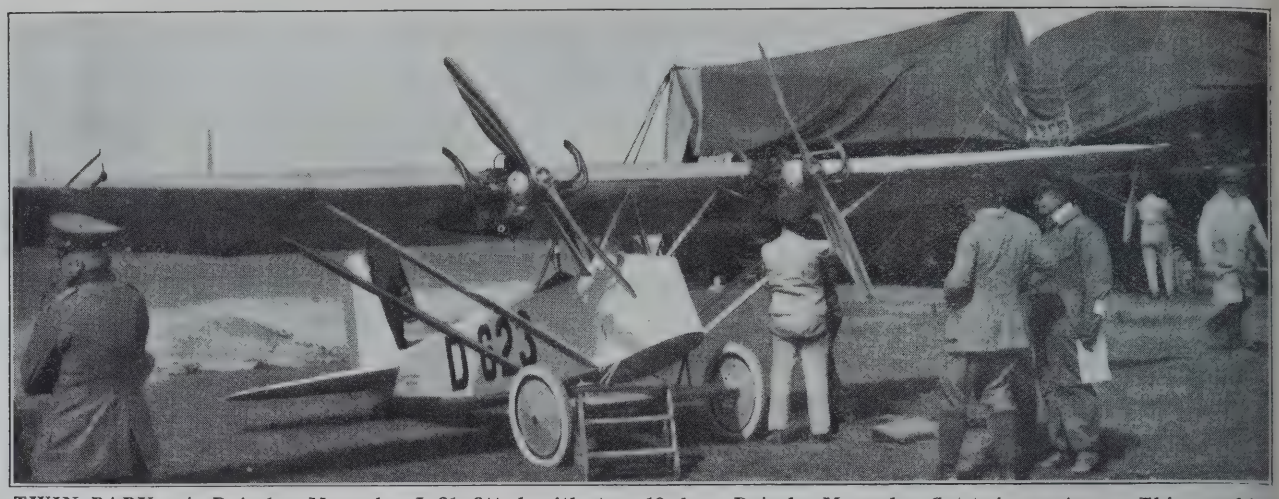
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



A TWIN BABY.—A Daimler Mercedes L.21 fitted with two 19 h.p. Daimler-Mercedes flat-twin engines. This machine with a sister machine were the only twin-engined machines in the Competition and one, flown by Herr Lörzer, put up an excellent performance.

The Question of Speed.

However, everything went perfectly well. We left Croydon strictly to schedule time at 08.00 hours, and we arrived at the Schiphol aerodrome at Amsterdam at 10.35 hours. We had a good stiff breeze behind us, and it was evident that the dear old Vimy would have a pretty tough journey back against it in the afternoon. When one returned to London one looked up the time-sheets and found that the machine took five hours and a-half to get back over a distance which had taken just over two hours and a-half to cover on the outward journey.

Now here is the first criticism one has to make. If air transport is ever going to be a success the people who are running air lines must realise that speed is the essence of the contract. It is perfectly absurd to permit passengers to travel in machines which when faced with a stiff breeze can only do about fifty miles an hour over the ground. Except in the teeth of an absolute hurricane a passenger aeroplane ought always to be able to make at least seventy miles an hour across country.

Wind-speed seldom exceeds thirty miles an hour, and at anything over about forty miles an hour the probability is that aerodrome managers would consider that machines and passengers had better stop on the ground. Roughly one may say that passenger-carrying machines ought to be able to do seventy miles an hour over the ground in the teeth of a thirty-five mile an hour wind. That means that every passenger aeroplane ought to be able to do 105 m.p.h. in a calm at cruising power. Which in turn means that the real top speed of the machine ought to be at least 130 miles an hour, and as much more as is possible after due consideration has been given to economy in construction and running costs.

Those may be taken as the minimum speeds at which modern aeroplanes should travel with their normal full load. Any less speed means the entirely unnecessary danger of the pilot having to go on after dark in order to reach his destination the same day and risk a crash through being compelled to make a forced landing just before or just after dark. No air line proprietor should ask his passenger to take such a risk. It is entirely opposed to all the principles of Safety First. And here one writes from experience.

At Amsterdam.

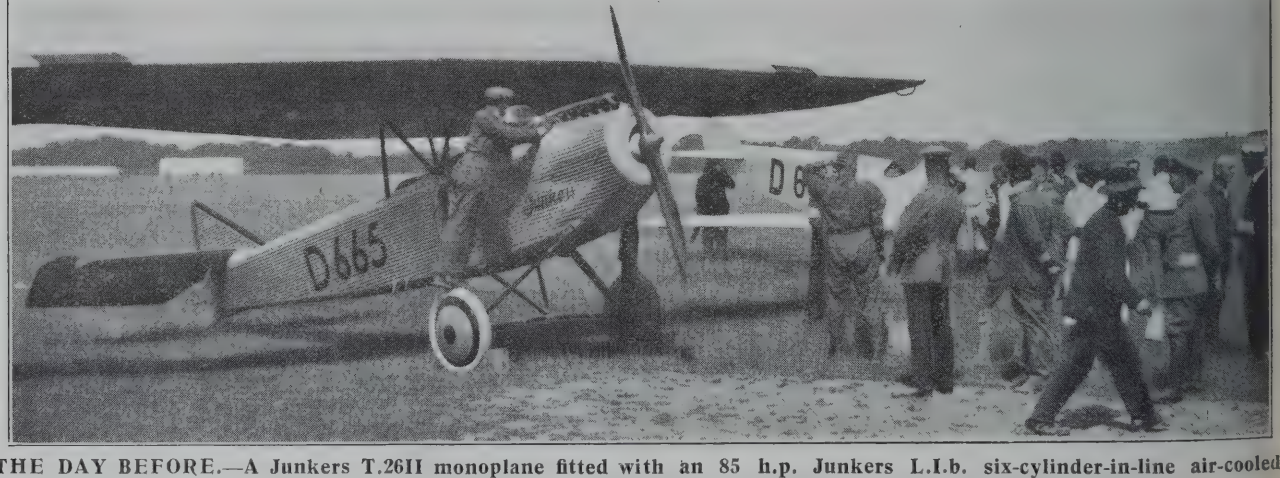
On reaching Amsterdam the four passengers and the Vimy were received with tender solicitude by Mr. P. A. Barnard, the local manager for Imperial Airways Ltd., who, as the French say, "expended himself" in his efforts to make everything easy for the voyagers. We and our luggage were handed over by him to the representative of the Aero-Lloyd firm, Mr. Winterfeld, a very cheery and charming young German. He is a remarkable linguist and he looks as if he would make a very good rugger forward. He also went to no end of trouble to make everything easy for us.

There is a very good little hotel at Schiphol where they gave us excellent food at a reasonable price and where the waiters apparently speak every known language. According to the time-table we were due to stop about three-quarters of an hour at Amsterdam before the Aero-Lloyd machine started for Berlin, but the good Mr. Winterfeld warned us that we might have to wait till the packages of flowers from the Dutch flower-fields arrived. Now the Dutch are an industrious people, but agriculturalists and horticulturalists all the World over pay little attention to the value of time, their measure of time being a matter of inches of stalk or diameter of bloom. Consequently we were something like an hour late starting from Amsterdam.

Our vehicle for the rest of the journey was one of the new Dornier Komets with a Rolls-Royce Eagle VIII engine. This machine has already been described in The Aeroplane, and therefore one need only say that it is an all-metal "high-wing" monoplane, that is to say the wings are fixed above the top of the cabin. The framework of the body and the wing-spars are of steel, and all the covering of body and wing is good stout sheeting of some aluminium alloy. A photograph of the machine will be found on the front of this issue of The Aeroplane.

As a job of work, at any rate judging it externally, the Komet is about as nice a thing as one has seen. Everything is beautifully finished and cleaned-up to the last ounce. One could not even find a rough rivet-head in the plating.

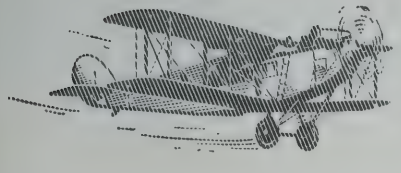
The cabin ought to be inspected by every aeroplane designer who has any intention of designing a passenger aeroplane. There are seats for eight passengers in about the



THE DAY BEFORE.—A Junkers T.26II monoplane fitted with an 85 h.p. Junkers L.I.b. six-cylinder-in-line air-cooled engine.

1,000 miles in 10 hours

THE DAY'S WORK OF ONE NAPIER AERO ENGINE

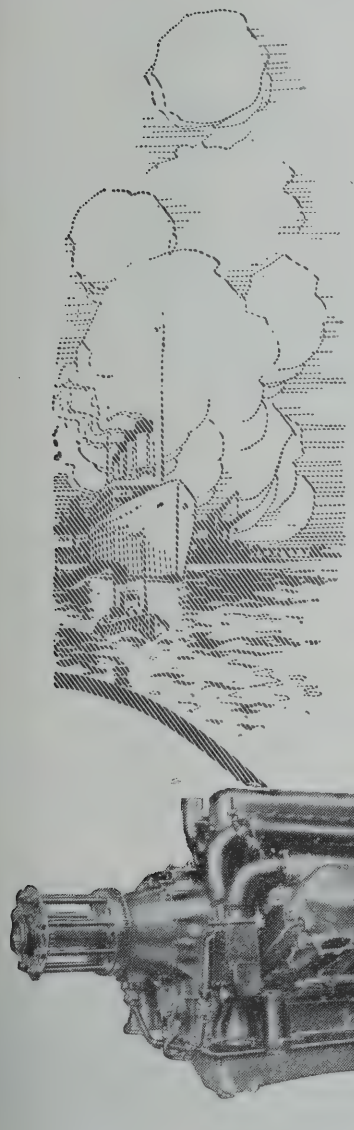


Captain F. L. Barnard, flying a D.H. 34 aeroplane fitted with a Napier aero engine on May 14th, made the journey from London to Cologne twice in one day. His time-table was:

Left London 5.6 a.m.	Arrived Cologne 9 a.m.
Left Cologne 10.5 a.m.	Arrived London 1 p.m.
Left London 3.15 p.m.	Arrived Cologne 7 p.m.

He was in the air for ten hours and covered over 1,000 miles.

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GETTING READY FOR THE RUNDFLUG.—The Caspar C.T.2 (Caspar-Theis—100 h.p. Mercedes engine) flown by Kpt. Lt. Ritter. Herr Theis, who has recently joined the Caspar firm as chief designer was formerly designer to the Halberstadt Co. and the C.T.2 resembles the war-time Halberstadts which were among the finest German two-seaters.

most comfortable wickerwork armchairs one has ever used, each equipped with comfortable cushions and head-pads.

Also each seat has a safety-belt with a quick-release clasp. Mr. Winterfeld explained to the passengers that it was advisable to fasten these belts in getting off and landing just in case through any mishap the machine should turn over while on the ground. At the time one did not quite see the necessity for the warning. But a few days later one learned that a similar machine, or perhaps the same machine, was actually blown over on the following Saturday while taxying out to start and had gone flat on its back. Under such circumstances if a passenger had no belt and forgot to grip the arms of the chair he might very easily pitch onto his head on the roof of the cabin and break his neck.

In addition to the passengers the machine carries a pilot and a mechanic in the cockpit under the leading edge of the wing. This cockpit is entered by a door of reasonable size at the forward end of the cabin. And in the door is a glass shutter through which passengers can communicate with the pilot.

The view from the cabin windows is perfect as there is no wing to interfere with the outlook. Furthermore, unless one takes the trouble to look up at the wing there is nothing to show how much the machine is rolling and pitching, for the cabin itself moves no more than does a railway coach. Consequently there is much less likelihood of passengers being made air-sick by the optical effect of a wing swinging all over the landscape than there is in either a biplane or a low-wing monoplane.

The Latest Vehicle.

Incidentally while waiting to start from Amsterdam one had the good luck to be able to inspect the new three-engined Junkers monoplane which was assembled at Lindholm in Sweden for Mr. Florman's Malmo-Amsterdam line. It also is a splendid job of work. The cabin is as luxurious as a Pullman car on a railway and the whole machine is an example of first-class design and workmanship. The three B.M.W.-Junkers engines are most cleverly streamlined into the structure of the machine.

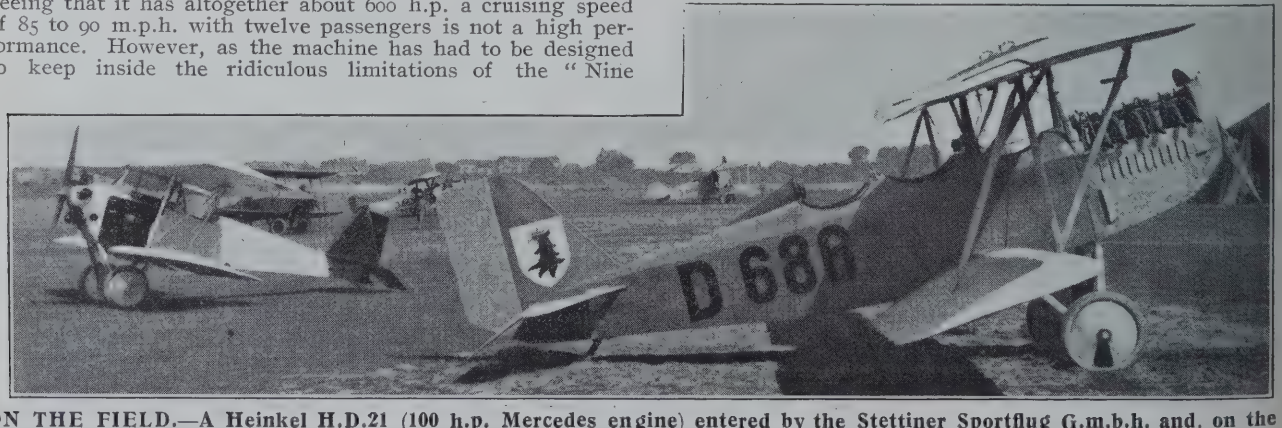
Apparently it flies very well, though it is distinctly slow. Seeing that it has altogether about 600 h.p. a cruising speed of 85 to 90 m.p.h. with twelve passengers is not a high performance. However, as the machine has had to be designed to keep inside the ridiculous limitations of the "Nine Points" of the Versailles Treaty no doubt the performance has been deliberately kept down.

Apropos this machine an Englishman who travelled by it not long ago transferred from it for his journey to England to an elderly machine belonging to Imperial Airways Ltd., which spent about half an hour taxying up and down the aerodrome at Amsterdam trying to get off and ultimately had to reduce its load by shedding a large Dutch passenger before it could get away. He said that it was like transferring from a modern Rolls-Royce to a pre-war taxicab. Which saying when spread among his influential friends is not likely to be a good advertisement for British Civil Aviation.

After seeing the Dornier Komet and the new Junkers and some of the smaller single-engined Junkers machines one came to the conclusion that Sir Samuel Instone was quite right when he said that the German air transport combine would be "a terrible menace to British commercial aviation." But one realised still more keenly the futility of *The Morning Post's* statement that the German machines "are not fit for British service."

The truth is that the German machines, from the passengers' point of view, are very much better than any machines in the service of Imperial Airways Ltd. That is not the fault of the British Aircraft Industry, for we all know perfectly well that the British aircraft firms, if given orders by Imperial Airways Ltd. or by the Air Ministry, are capable of building machines which would be quite as comfortable for the passengers as are the German machines and would probably be safer, thanks to Air Ministry inspection of design and construction, and would possibly have a better performance.

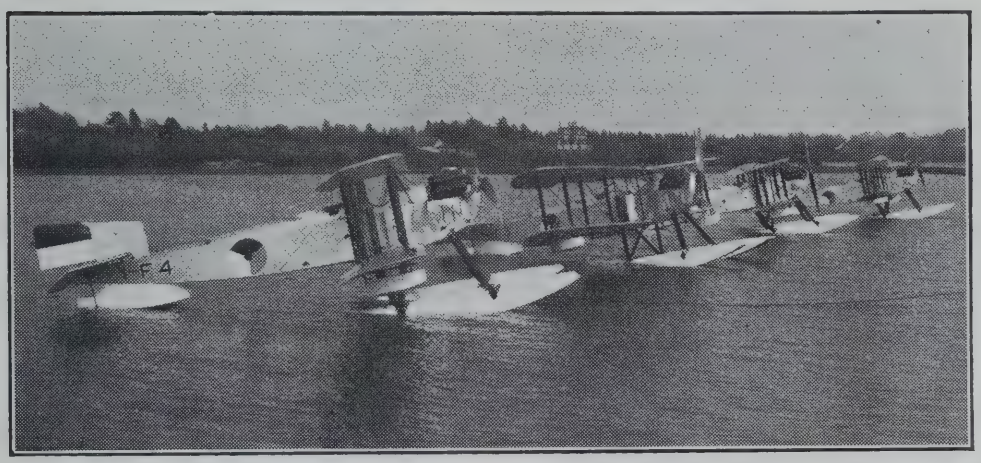
One only hopes that the new three-engined (Jaguar) Armstrong-Whitworth type, which is to be known as the Argosy, will confirm one's belief in this respect. The first of these is not due out till next year, but in the meantime the cold hard fact is that, thanks to the unenlightened policy of those responsible for Imperial Airways Ltd., there is not at the present moment a machine on any British air line which can compare with the new German machines, except in the matter of speed.



ON THE FIELD.—A Heinkel H.D.21 (100 h.p. Mercedes engine) entered by the Stettiner Sportflug G.m.b.h. and, on the left, a Stahlwerk Mark M.E.II (60 h.p. Baer engine).

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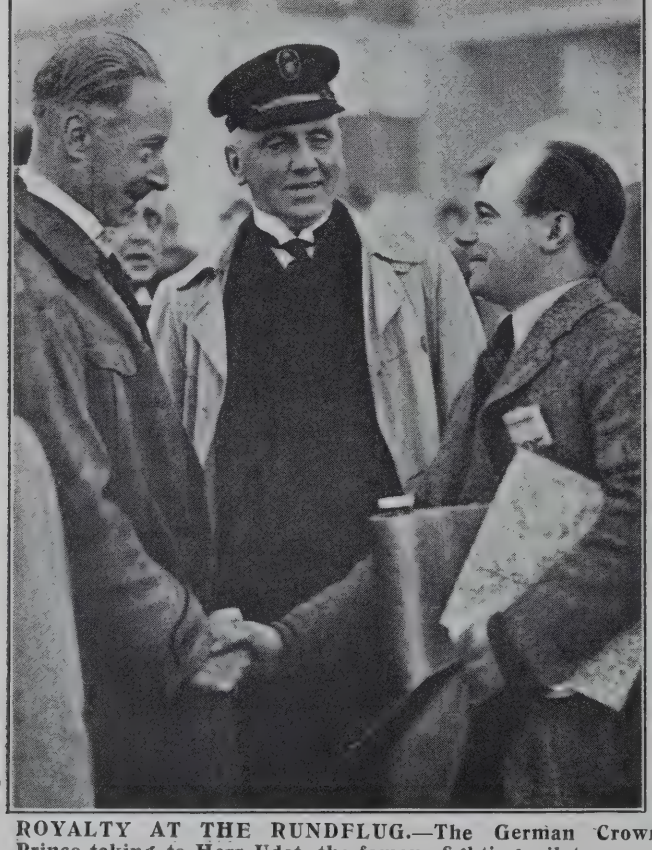
AT THE START.—A view of machines going up to the line on the first day. This view over the heads of the crowd was as near as the press could get. The machine in the foreground, D.624, is a Stahlwerk Mark M.E.II (39 h.p. 3-cylinder Mark engine) and D.644 is a Dietrich D.P.IIa biplane (75 h.p. Siemens engine).

The Second Stage.

As a result of the aforementioned horticultural delay we got away from Amsterdam somewhere after midday and made a quick journey to Hannover, the intermediate stop between Amsterdam and Berlin. Our pilot was Herr Kommol, a good type of the quiet very-much-in-earnest German aviator. From one's seat in the cabin one could see his elbow and the control wheel of the machine. The day was sunny and there were heaps of sun-bumps about, especially over the flat country in East Holland and West Germany, where the open sandy plains are patched with small forests.

Every time we passed over a patch of wood we dropped and every time we passed clear of it we got a lift. And every time a bump came one saw Herr Kommol's arm and the wheel move before one felt the bump on the machine. At no time did the wing tips move more than about a foot from their position in relation to the horizon, and the machine pitched as little as it rolled. And, incidentally, one could not see the slightest sign of whipping or bending in the overhung wing-tips which project outside the struts which run from the bottom of the fuselage to half way along the wings.

After crossing the German frontier the scenery became rather monotonous and one went to sleep, the motion of the machine being very considerably less than that of any ordinary express train. One was awakened by the slowing of the engine as we came down to land at Hanover.



ROYALTY AT THE RUNDFLUG.—The German Crown Prince taking to Herr Udet, the famous fighting pilot, now a successful designer.

The sole and only criticism possible about Herr Kommol's flying is that he is inclined to do such steeply banked turns that inexperienced passengers may think that the machine is capsizing, and those who are slightly more experienced may wonder whether he is going to do a violent sideslip and get into a spin. Personally one does not mind this when a machine is landing and has got its nose well down, but one likes it less when it is done on a climbing turn after starting with full petrol tanks. However, Herr Kommol evidently knows his machine thoroughly, for his actual landing was as soft and steady as one could wish.

First Impressions of Germany.

At Hannover one first set foot on German soil and met the German at home, and one liked the country and the people at first sight. We were met by a very friendly official of the Aero-Lloyd who took us to the wooden hut which does duty for custom house, office, waiting room, restaurant and everything else. There we were met by a large handsome policeman in a very military uniform and an amiable smile, who asked for passports and duly returned them to us with the stamp of the German Reich. And we had excellent German bread and sausage and coffee from a friendly restaurant keeper.

One received then an impression, which was continually confirmed during the days which one spent in Germany, that the natural disposition of the German is to be friendly. In France one meets from customs people and gendarmes and other officials a politeness which seldom has in it any suggestion of friendliness. In Germany one met with that frank friendliness which needs no politeness to make it pleasant.

Also one was struck by the quiet though effective way in



DR. ING. LACHMANN standing in front of a Dietrich D.P.IIa (77 h.p. Siemens engine). Dr. Lachmann flew a D.P.VIIa monoplane in the contest. He is the inventor of a system of wing-slots similar to the Handley Page and has combined his interests with those of that firm in Germany.

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AT THE START.—Jockeying for position on the starting line. D.679 is the Albatros L.69 (100 h.p. nine-cylinder Siemens engine) flown by Ungewitter, which made fastest time on the first day, and D.677 is a Heinkel H.D.21 (100 h.p. Mercedes engine) entered by the Arado G.m.b.h. of Warnemünde.

which everything was done. Nobody hurried and nobody shouted. Things just happened. There were about a dozen people in the hut all talking, and yet there was less noise than one would hear in an ordinary English drawing room. Whether that particular type of low soft voice is characteristic of North-West Germany one cannot say, but it certainly struck one as being remarkably soothing after the conversational riot which is characteristic of some other countries.

We stayed rather longer at Hannover than seemed absolutely necessary, considering that according to the time table we were due at Berlin at about 16.00 hours. But it was a beautiful sunny day and everybody seemed very much at peace, and apparently the spirit of the Dutch flower-growers had been carried with us into Germany. One had the good fortune to have as a fellow-passenger an English lady who had spent most of her life in Germany and kindly acted as interpreter, so one was able to gather some idea of what was going on.

An Incident.

Somewhere in the direction of 16.00 hours we started for Berlin. After flying for about a quarter of an hour Herr Kommol suddenly turned the machine round and headed back for Hannover. One of the Aero-Lloyd mechanics who had travelled with us from Amsterdam in the cabin made some investigations through the door leading to the pilot's cockpit, and said something about *heiss* and *wasser*, from which one gathered that the engine was overheating for some reason or another.

Herr Kommol reduced the speed of his engine and one realised that he was up against the problem of whether he should try to get back to Hannover against the strong wind with the engine throttled down to keep it cool or whether he should try to reach the aerodrome in the shortest possible time by keeping his engine going at something like full power, with the probability of overheating it to such an extent as to wreck its insides. The country underneath was not particularly tempting for landing, as it is cut up by ditches and dykes and a great deal of it is rough sandy scrub. However, by judicious nursing, and a few spasms of full engine-power when we began to sink too low, we reached the aerodrome without doing any damage to the engine.

Examination showed that something had gone wrong with the water pump, so a fresh one was fetched from store and the two mechanics who had been travelling in the machine assisted by a couple more from the aerodrome, set to work to fit a new water pump complete. And the way they worked was most impressive.

The job was one which demanded strict co-operation between all hands, but they never got excited about it and never raised their voices. In some Mediterranean countries four mechanics working inside the engine-cowl of an aeroplane would have made as much noise as the engine itself. But those German mechanics merely carried on a gentle conversation which was inaudible a few feet away from the machine. And the businesslike way in which they went about their work gave one confidence that when the job was done it would be done properly.

Evidently the young German aeroplane mechanic of to-day is of the same breed as the older men of the great days of motor-racing before the War, when the Mercedes car used to appear at international meetings and sweep everything before it, thanks to the skill and industry of the crews of mechanics who travelled with the car.

When the new pump was fitted the Aero-Lloyd people decided that as the hour was so late and the sun was setting, instead of making a test flight to see whether everything was working properly, the passengers should get into the machine and that if nothing went wrong in a quarter of an hour we should push straight off to Berlin.

The Last Lap.

Herr Kommol took the machine off beautifully over a particularly nasty area, full of canals and chimney-stacks, and after a couple of circuits of the aerodrome made up his mind that all was well and we started on the last stage of the journey. By this time the sun was very low, the sun-bumps had disappeared and there was a regular carpet of thin cloud high up which reflected the rays of the setting sun and shed a curious ghost-like light on the ground. The Komet ran as if on rails without a movement of any kind. And for over an hour the note of the engine never varied.

One began to wonder whether that continual drumming on one note without alteration of pitch would fracture some metal part in the machine which might last for years if only the period of vibration altered now and then. Of course that is the evil of having something of an imagination and a smattering of education in physics. But in truth so little is known about the effect of vibration on all-metal machines that perhaps such suspicions are justified, especially when one has nothing in the wide world to do except sit in a very comfortable chair and think about them.

You see, continued vibration on one note might fracture some detail part which might not matter at all, or it might fracture something on which the whole safety of the machine depended. A cracked panel in the body-work might be of no account. A cracked capping-strip in a wing might let the whole wing burst. And nobody, least of all the designers, knows what might happen.

The Berlin Terminal.

However nothing did happen and we arrived happily at the Tempelhofer Feld at Berlin just before dark, at about 20.45 hours instead of getting there at 16.00 hours according to the time-table.

The Tempelhofer Feld is the modern terminal aerodrome of Berlin in place of Staaken, whence came the Zeppelins in former days. It is an enormous and very nearly perfect aerodrome to the South-East of Berlin, and it was once a military exercise ground. As such it was completely bald, but now it has quite a respectable covering of grass.

Much of the original Feld has in these socialistic and non-imperialist days been built over by houses for the working classes, and a good deal of it has been turned into what we call allotment gardens. But there remains an aerodrome which is roughly about as big as Laffan's Plain at Aldershot. You could put the Croydon Aerodrome into one corner of it and forget it. And all of the Tempelhofer Feld is dead flat.

The only drawback to it is that it is practically surrounded by buildings, and to reach it from any direction except South-East you have to fly over about ten miles of houses. The aerodrome is in fact only ten minutes by motor car from the very centre of Berlin, and therefore it is excellently situated from the air-line point of view. But if anybody suffers from engine failure about five miles from the aerodrome there is going to be rather a sticky crash.

The mere extent of the aerodrome has its disadvantages, because pilots are rather inclined to presume on the size and be a bit careless about getting off. The day after one arrived a Fokker monoplane started to get off, evidently with an insufficient run, and the pilot seeing that he was not going to get over the houses to the South-West of the aerodrome put his machine down in some allotment gardens. He did it quite skilfully on one wing tip, and crashed his machine without damaging his passengers. But if he had shown better judgment in starting he would not have required so much skill in alighting.

In our case Herr Kommol made one of his usual perfect landings and delivered us safely to the ever friendly officials of the Aero-Lloyd.

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machine was the ubiquitous Major von Tschudi. One had never had the honour of meeting him before that moment, though one had corresponded with him in a friendly way both before and since the War on matters affecting the German Aero Club.

For weeks previously Major von Tschudi had been organising the Rundflug. How many hours he had worked at it nobody knows. Judging by results he must have done about three men's work. But judging by appearances he might just have returned from a holiday. He is one of those amazingly energetic men who thrive on hard work and always seem to have time to spare for the ordinary amenities of life.

As the time was then about 21.00 hours apparently Major von Tschudi thought that he might take a day off, so having himself piloted one through the customs formalities and so forth he took one to the Aero Club von Deutschland and entertained one with true German hospitality.

Incidentally the German Aero Club lives in a building which is a regular palace compared with the Royal Aero Club of the United Kingdom. Also it is maintained with that German passion for spotlessness and polish which must make our Aero Club premises look uncommonly shabby to any visitors from Germany.

In this palace the German trade society which corresponds to our S.B.A.C. has its offices, and there are one or two other aeronautical associations of one kind or another also located there, so that the Luftverband Haus is really the centre of German aviation. One heard, though not from himself, that Major von Tschudi induced the Club to buy it in the days when Marks were cheap, so the Club absolutely owns its premises.

Goerz Methods.

On Saturday morning one came across an excellent example of German kindliness combined with business enterprise. Before going to Berlin one had asked Major von Tschudi whether he could possibly borrow a camera from somebody so that one might take photographs of the Rundflug, as one did not want to add to the weight of one's baggage when flying the aged but excellent Goerz-Anschutz which has produced all the photographs, some thousands in number, which one has taken oneself for The Aeroplane since this paper was started in 1911.

On arriving one found that the Goerz company at Major von Tschudi's request had sent to Captain Kropp's house a beautiful brand-new camera of about half-plate size. Unfortunately one had omitted to say that for taking numerous photographs on aerodromes the only possible thing to do is to use a film pack, as the necessary number of plates would be impossibly heavy. Consequently on Saturday morning it was necessary to try and get a film-pack holder for the big camera. As this could not be got in Berlin from any of the very civil shop-keepers on whom we called, we had to go to the Goerz works, where we discovered that no film packs existed for this particular size of camera. Therefore a friendly official of the Goerz company promptly changed the camera for a smaller size with a film-pack holder and also supplied a number of film-packs for it. With these one was able to take a number of pictures which one hopes will be entertaining to the readers of this paper.

Now, even allowing for the fact that the Goerz firm do get a certain amount of advertisement out of lending the camera, thus making the loan a business proposition, one was none the less impressed by the friendly and kindly spirit in which the loan was made and by the trouble which the firm took to send the original camera and to change it for the other one. It was an excellent example of the spirit in which a good-class German firm does its business.

Before the Competition.

Saturday afternoon was spent going round the avenues of tents in which the machines were being got ready for the start on Sunday morning. 91 machines had been entered for the competition and something over 70 actually arrived at the Tempelhofer Feld. Of these some were reserve machines which were not intended to start. These figures may give some idea of the spirit which animates German aviation.

These machines were divided into three classes. Group A was for machines up to 40 h.p. and in this there were 29 entries. The second, Group B, was for machines from 40 h.p. to 80 h.p. and in this there were 35 entries. The third, Group C, was for machines from 80 h.p. to 120 h.p. and in this there were 27 entries.

In Group A there were seven entered with Blackburne engines, four with A.B.C. engines and one with a Douglas. In Group B two were entered with American Wright engines of the 60 h.p. three-cylinder radial type. In Group C five were entered with Bristol Lucifers, also three-cylinder radials but of 100 h.p. So what one might call English-speaking entrants were quite well represented in the competition.

The Spirit of Germany.

Some idea of the keenness of the competitors may be judged from the fact that one of them said that he had only arrived that Saturday morning at the aerodrome instead of two days earlier as he had intended, because he simply had no money with which to pay for petrol for the competition. He had had to scrape round among all the people who owed him any money to raise a few hundred marks to pay running expenses and he had only just managed to get together the necessary amount the previous evening.

One gathered that quite a number of the small firms who were building aeroplanes in Germany continually exist in this same hand-to-mouth way and struggle along bravely supported chiefly by their absolute faith in the future of German aviation. It reminded one of the old days at Brooklands, when people like A. V. Roe and Howard Flanders and others used to go without their dinners in order to buy such things as wires and turnbuckles with which to complete their machines. And it is that fine German spirit of undefeatable perseverance which is going to win Germany's proper place in the air.

Also there were among the competitors several societies of students, such as the Akademische Flieger Gruppe, of the Darmstadt Technical School (who entered the little Mohamed monoplane of their own build), and the Flugtechnische Verein of Spandau and the Flugtechnische Verein of Lübeck. Also there were entrants such as the Martens Flying School and the Munster Flying School besides the machines entered by regular manufacturing firms.

While walking round the tents one was again impressed by the quiet solid way in which the German does his work. There was no shouting or running about. Everybody was working quietly and swiftly and calmly. And that is what probably accounts for the high percentage of actual starters.

One will not attempt to describe the machines in detail here, but one hopes to devote considerable space to them in the near future. All one need say is that taking them all round the machines were very well made and showed that great care had been taken in their construction, although in some cases very little time and money had been spent on mere spit-and-polish outside finish.

There were all sorts and sizes between the limits of 18 h.p. and the maximum 120 h.p. There were all-metal machines, there were machines built mostly of wood, there were stick-and-wire machines, there were machines covered with canvas and there were machines covered with plywood. There were low-wing monoplanes, and biplanes with small gaps and biplanes with large gaps, and there were even two tiny little twin-engined parasol monoplanes. There were long, thin fuselages and pot-bellied fuselages. There were water-cooled engines and there were air-cooled radials and there were air-cooled in-line engines.

In fact, except that there were no pusher machines, practically every known general arrangement scheme was represented. And probably almost every known wing section was represented also. When the results come to be tabulated in terms of wing sections and disposition of planes and so forth they should be extremely interesting.

Altogether it was quite the most interesting array of different types of aeroplanes that one has ever seen. And it must have given all the foreign visitors a very good impression of German determination to win a leading place in aviation.

At The Start.

On Sunday morning we arrived at the aerodrome at about 03.30 hours and already there must have been something like 100,000 people in the enclosures, not to mention a few more tens of thousands who hung around the boundary fences of the enclosure as what Mrs. Kropp called "fence guests," or what our early joy-ride people in this country used to call "hedge tickets."

At that hour the sun was rising in quite a clear sky, but by the official starting time, 04.00 hours, clouds had come up from the South-West, and when the first machine started at about 04.15 slight rain was falling. There was never enough to wet anything very much and certainly not enough to lay the all-pervading dust of the Tempelhofer Feld but there was just enough to turn a warm cheerful morning into a cold and dismal one. But the rain did not damp the enthusiasm of the starters, for out of the 70 machines which put in an appearance 56 got away during the day. 37 of them had started by 08.00 hours when we got tired of watching the proceedings and went home to breakfast and bed.

To tell the truth the start was a very dull affair. Although the German Aero Club had made all the arrangements for the competition the actual control of the ground was under a Government Department which also controls the police force. And that department had issued orders that only six press photographers were to be allowed on the aerodrome itself.

The order was rational enough in some ways, for about 600 representatives of newspapers had received passes for the enclosure which was reserved for "Guests of Honour." Naturally, as Major von Tschudi pointed out, not even the most generous of clubs could have allowed 600 pressmen together with their feminine accompaniments to run about loose on the aerodrome. But unfortunately none of the six privileged photographers had any idea of how to photograph



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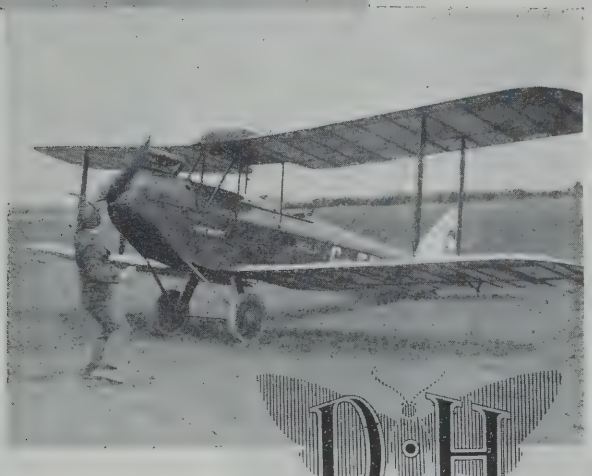
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A VIEW OF THE START.—All that could be seen from normal altitudes in the "Enclosure of Honour."

an aeroplane when getting off the ground, and consequently there are no pictures available of the machines actually starting.

Such pictures as appear in this paper were either taken on the Saturday before the competition or were taken on the morning of the start over the heads of the crowd, when the machines were being pushed up to the starting point, by the simple process of holding the borrowed Goerz upside down with the view-finder underneath and using it as a periscope. It was one of the few occasions on which one has found an advantage in being above the average altitude.

We in this country would probably have compromised by admitting six press photographers belonging to news-agencies and individual representatives of the purely technical aeronautical press, seeing that the meeting was concerned with aviation. Still regulations are regulations and one has no quarrel with the authorities for sticking to their ideas.

The position may perhaps best be expressed in the epigram, quoted by Professor Berson when discussing the subject, which runs "In England everything is allowed that is not forbidden. In Germany everything is forbidden that is not allowed. And in Austria everything is allowed that is forbidden." At any rate one can say for the German regulation that it relieves official people of any chance of being charged with favouritism in allowing privileges to one person which are denied to another. All the same one hopes that the Air Force authorities will not be too German in their regulations at the R.A.F. Display on June 27.

So far as one could discover no very important Government officials honoured the meeting with their presence. Certainly the most exalted personage present was His Royal and Imperial Highness the German Crown Prince, who, though he appeared purely as a private gentleman, was saluted by most of those present in a manner which acknowledged his rank.

Incidentally it was interesting to notice that the members of the German Aero Club all wore on their caps the old pre-war badge of the Kaiserliche Aero Club, with the initials K.A.C. on it. Being, as a German friend put it, a "jokeful man," one drew the attention of one or two members of the Club as tactfully as possible to this interesting point. They all disclaimed any deliberate intention of starting an anti-republican revolution, and explained the badges by saying that they had worn them so long that they had forgotten what was on them.

One quite believes this explanation. But one felt personally that the royal badge did give an air of social respectability to the proceedings which would otherwise have been lacking. Similarly it was pleasant to see quite a number of officers, or former officers, of the old German Army wearing their uniforms complete with iron crosses.

The People.

There was considerable interest in merely watching the crowd in the first-class enclosure. One of the most noticeable points about it was the absurdly small amount of difference there is in type between the good class young Englishman and the good class young German. Although the starting hour was so uncomfortably early a very large number of the better class people of Berlin had made their way to the Tempelhofer Feld and among them were quite a number who would have passed unnoticed among the lads and lasses of the village of London, so similar were they in type to our own people. And the heavier and more middle-aged people were almost identical in type with the ordinary English business folk from Manchester or Leeds or any of the big northern cities.

Incidentally during one's visit to Berlin one received quite distinctly the impression that under the Socialist Government Berlin has developed a new class in society which corresponds almost exactly to the *Rive Gauche* in Paris, the old Royalist families who live in a little world of their own on the left bank of the Seine. This class in Berlin is composed of members of the better class families who, not owning family estates but having lived on money invested in some way or another are now reduced if not to actual poverty at any rate to a very small fraction of the income which they once enjoyed.

These people do their best to maintain their homes and to keep up their proper establishment and their proper places in their own rank of society by the process of spending their income on their homes instead of in running about and enjoying themselves. They deny themselves holidays and theatres and motor cars and so forth in order to keep the sort of house to which they have been accustomed. In England so many people under similar circumstances, finding the purchasing power of their incomes reduced by the fall in the value of money, instead of keeping up their establishments have taken to living in small flats or apartments and spend their money on having a good time generally.

The English point of view of course is quite understandable but there certainly is something rather fine in the German ideal of maintaining the home. It also explains the solidarity of the German nation and encourages still further one's belief in Germany as the main defence of Western Civilisation against Eastern Barbarism.

This digression of course has nothing whatever to do with aviation but the facts disclosed may have a good deal to do with military moral in the next war.

On Whitsun Monday we went to the Tempelhofer Feld to see how things were progressing and learned that 34 machines had returned in the first day. This was certainly an excellent result considering that the day's journey was about 600 miles in length and that the direct route passed over the Hartz Mountains, which meant either a climb to 7,000 feet or so or else a fairly long detour.

The first man home had been Billik on the Udet U.10 monoplane with the 60 h.p. Siemens. The fastest time was made by Ungewitter on an Albatros with the 100 h.p. Siemens engine. Possibly the most meritorious flight of the first stage was that made by Fuchs on the little Mohamed with the Blackburne engine. This machine was built by the flying group of the Darmstadt Technical School and naturally attracted a good deal of interest and sympathy.

Other machines kept on arriving at odd intervals during the day but there was little use in trying to keep track of them, because the positions on the first day would probably bear very little relation to the final placings after five days' flying. The final results, as already stated, will appear when it is possible to obtain them from Germany.

Another indication of the spirit which inspires German Aviation is shown by the prizes. The big prize for the meeting was valued at 100,000 marks (£5,000 at the rate of the new standardised mark) and was presented by the *Berliner Zeitung*. This is divided among the first, second and third of each of the three classes and has been awarded on a formula which essentially makes for reliability. The two greatest German war pilots, von Richthofen and Boelcke, have been commemorated, the first in a prize of 45,000 marks given for performances by German engines, and the second by a prize of 50,000 marks for machines in group C, the 80—120 h.p. class. Also the great pioneer of European aviation, the late Otto Lilienthal, is commemorated by a prize of 105,000 marks awarded on a basis rather like that of the Air Ministry's Light Aeroplane Competition. Furthermore the German Aero Club has put up 400,000 Marks for the purchase of aeroplanes under 70 h.p.

Local patriotism is represented by numerous minor prizes presented by the cities of Berlin, Schwerin, Hamburg, Bremen, Munster, Frankfurt, Darmstadt, Gotha and Leipzig and others at which the competitors alighted.

One hopes that next week the final results will have been received from Germany and that it will be possible to publish them in such a way as to indicate precisely the value of the performances by the successful machines.

As one returned to England on the Tuesday one proposes next week to give a brief account of one's own private Rundflug to Berlin and back in the hopes that the experiences of the second half of the journey may be of use to those concerned with Civil Aviation.—C. G. G.

(To be continued.)



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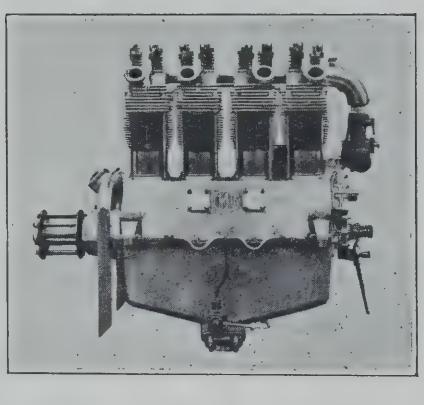
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FACTS ABOUT THE RUNDFLUG.

The opening stage of the Deutscher Rundflug, which began on Sunday, May 31, was mentioned in THE AEROPLANE of last week and is dealt with by the Editor in his impressions of the start elsewhere in this issue.

The second stage, Berlin—Hannover—Paderborn—Darmstadt—Weimar—Chemnitz—Dresden—Berlin, was entered upon on Tuesday, June 2. This circuit, of roughly 700 miles, was the most difficult to be covered, part of the course lying over mountainous and thickly-wooded country.

Of the 38 machines that qualified to start on this circuit, five were compelled to return to the starting point owing to engine trouble, but all but one were able to continue later.

The one exception was Herr Billik, on the Udet U.10 (No. 640. 60 h.p. Siemens engine), who, on taking off, somersaulted on the ground for some unknown reason. The machine was wrecked but the pilot was fortunately unhurt.

Up to 17.00 hours only four of the 38 starters had returned. The Albatros L.69 (No. 679. 100 h.p. Siemens engine) piloted by Herr Ungewitter, was the first to return and he was followed by two Udet monoplanes and an Albatros L.68 (No. 649. 75 h.p. Siemens engine), flown by Freiherr von Richthofen, cousin of the famous fighting pilot.

In all 23 machines completed the course on June 2 and three more had arrived before 17.00 hours on June 3.

The fastest time for the second stage was put up by Herr Polte, on a Udet U.8 (No. 670. 100 h.p. Siemens engine), who completed the course in 10 hrs. 10 mins., the Albatros L.69 (No. 679) flown by Herr Ungewitter, which was the first arrival, taking some 30 minutes longer on the 702-mile course.

The most meritorious flight of this stage was that put up by Herr Lörzer on the Mercedes-Daimler L.21 (No. 622. Two 19 h.p. Mercedes-Daimler flat-twin engines), which completed the circuit in 16 hrs. 26 mins., and arrived back at Berlin at 20.46 hours on June 2. This same machine completed the first circuit of 602 miles in 36 hrs. 54 mins.

Apart from Herr Billik's accident at Berlin in taking off, there were only two other minor accidents.

Herr von Bülow on the Baumer B.III biplane (No. 638. 60 h.p. Wright Gale engine), forced-landed near Mariendorf, and turned a somersault. The pilot was uninjured and it was hoped that the machine would be repaired in time to take part in the third circuit.

A Dietrich D.P. VIIa (No. 637. 55 h.p. Siemens engine), flown by Herr Kreuter, crashed at Höxter, after a forced landing. The Mahomed monoplane (No. 611. Blackburne Tom Tit engine) flown by Herr Fuchs, was unable to take part in the second circuit owing to engine trouble.

The weather conditions on June 2-3 were extremely unfavourable, particularly over the mountainous country between Darmstadt and Erfurt, where rain and mist considerably hindered the pilots.

On June 4 the third circuit, Berlin—Dessau — Erfurt — Wurzburg — Stuttgart — Bamberg — Halle — Berlin (708 miles) began at 04.00 hours. Up to 17.30 hours only four machines had completed the circuit. Certain delay was occasioned owing to heavy ground fog at Erfurt and the local police would not allow any of the machines of Class B who were compelled to land at Erfurt to proceed for one hour.

Machines of the other classes were signalled down but the first two machines to arrive at Berlin evaded these signals and completed the circuit in good time in spite of the adverse weather.

The first arrival was Herr Polte, on the Udet-U.8 monoplane (No. 670), who completed the course in 10 hrs. 51 mins. He was followed by Herr Basser on a Heinkel H.D. 21 (No. 680. 100 h.p. Mercedes) in 11 hrs. 18 mins., and Freiherr von Richthofen, on the Albatros L68 (No. 649. 75 h.p. Siemens engine), in 12 hours.

Herr Ungewitter, chief pilot of the Albatros Werke, on the Albatros L.69, was forced to land in the top of a tree at Haslach, in Oberfranken. The machine was completely wrecked, and the pilot broke his ankle.

A Caspar C.24 (No. 675. 100 h.p. Mercedes engine), flown by Dipl. Ing. Spiess, crashed near Wurzberg, the machine being completely written off but the pilot was uninjured.

On June 6 the fourth circuit, Berlin—Naumberg—Nurnberg-Fürth—Augsberg—Munich—Hof—Leipzig—Berlin (664 miles), began. The machines took off in ideal weather conditions, and of the 35 machines that left on June 6, 33 had returned by 16.00 hours on June 7. Herr Baumer, on the Baumer B.II monoplane (No. 639. 60 h.p. Wright Gale engine) landed at 12.42 hours on the 6th, having completed the circuit of 664 miles, including two compulsory landings and one forced landing owing to slight engine trouble, in 8 hrs. 12 mins.

The second machine to arrive was the Udet-U.8 (No. 670), piloted by Herr Polte, who completed the course in 10 hrs. 17 mins.

Herr Basser, on the Heinkel H.D. 21 (No. 680), was third, in 10 hrs. 44 mins. With the exception of Herr Baumer's forced landing, mentioned above, the fourth stage was free from accident of any kind.

On June 8, the competitors started on the final circuit—Berlin — Görlitz — Breslau — Frankfurt — Stettin — Stralsund—Rostock—Berlin (647 miles).

Thirty-eight machines started at 04.00 hours in favourable weather. There was a strong head wind for the competitors on the first part of the circuit as far as Breslau, but, in spite of this, the section was covered in good time by a number of machines.

Herr Baumer, on the Baumer B.II monoplane (No. 639. 60 h.p. Wright Gale engine), covered the 186 miles to Breslau in 1 hr. 47 mins., and the entire course, of 647 miles, in 8 hrs. 8 mins. Herr Polte, on the Udet-U.8 (No. 670. 100 h.p. Siemens engine), was second in 8 hrs. 48 mins., and Herr Basser, on the Heinkel H.D. 21 (No. 680. 100 h.p. Mercedes engine), third, in 9 hrs. 5 mins.

At 17.00 hours on June 8, eleven machines had arrived back at Berlin, and up to this time no casualties had been reported, with the exception of a forced landing of one of the Mercedes-Daimler machines, but it was expected that this machine would be able to resume its flight in time to complete the circuit within the prescribed time.

It is interesting to note that the only machines left to complete the final circuit in the Class A (up to 40 h.p.) are three Daimler-Mercedes monoplanes, two of the L.20 type, fitted with 19 h.p. Daimler-Mercedes engine and one of the L.21 type, with two 19 h.p. Daimler-Mercedes engines.

The final results of the Rundflug will not be known for a few days but it is hoped that a complete table of the results will be available for publication next week.




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THE REHEARSAL OF THE R.A.F. DISPLAY.



"HELLO CUCKOOS!"—An impression of the magnificent formation work of Sq. Ldr. Peck's famous 25 Squadron manœuvring by wireless word of command. The squadron's wireless call sign by which orders are prefaced is "Cuckoos."

On Friday of last week No. 6 Group staged at Kenley a rehearsal of their part of the R.A.F. Display to which a number of visitors was invited. If the remainder of the Pageant attains the high level of flying to which Air Commodore Samson's group has now reached it should be even better if possible than the previous years.

One is told that this year the Display will be more a demonstration of the average work of the R.A.F. because pilots will give demonstrations of their ordinary work instead of as in previous years having picked stars to perform individual evolutions. For instance, Sq. Ldr. Longton, who was always up till now been one of the star performers on single-seat fighters is now commanding No 58 Bombing Squadron. Therefore it is as a pilot of a bomber that he will be seen. He will pilot the Boulton and Paul Bugle, the twin-Jupiter-engined bomber, and will combat a couple of fighters. The fighters will be Grebes and their pilots will be taken from the Central Flying School.

The rehearsal at Kenley was opened by low bombing, mostly by Grebes with a few Bristol Fighters and a Snipe thrown in. After this, Flg. Off. C. W. A. Scott gave a splendid performance of aerobatics on a Snipe. His upside down flying was specially noteworthy—but why a Snipe in A.D. 1925?

Then came a fine piece of formation flying by No. 25 Squadron. No. 25 have already a very high reputation, which they increased last year when they won the Air League Challenge Cup at Lympne. On Friday they did some wonderful air drill on Grebes led by Sq. Ldr. A. H. Peck. Instead of drilling to signs, as has been done in the past, the machines manœuvred to word of command spoken by wireless by the squadron leader. This was picked up on the ground and amplified by means of a loud speaker which made the demonstration doubly entertaining. The words of command were heard very clearly, though "Uncle" Peck at times sounded somewhat husky. It is too good to hope that No. 25 Squadron will be allowed to give at Hendon such a lengthy demonstration as they gave on Friday.

After this Sq. Ldr. Maxwell in a Grebe chased an elderly Bristol Fighter all over the sky in a most convincing manner. One cannot help thinking that Sq. Ldr. Maxwell might have found something a little bit younger to chase, as it was rather reminiscent of a little boy chasing an elderly though still skittish cow. The next thing we shall hear of Sq. Ldr. Maxwell will be that he has unearthed the old 50 Gnome Avro which he used to break in good company at Farnborough in 1915 and will start chasing it out of the sky with a Gloster racer. One hopes that he was kinder to the ex-Prime Minister on Monday, if the report is correct that he was the pilot who took him from Lossiemouth to Turnhouse. Sq. Ldr. Maxwell is certainly a very fine Grebe pilot and his flying at the Display will be watched with great interest.

The Display ended with a general attack on a model of a



HIMS—ANCIENT AND MODERN.—A photograph taken at Spittlegate showing twelve old D.H.9as and six Fairey Fawns practising for the 18,000 h.p. formation work at the Display. D.H.9as and Fawns surely are more masc. than fem. so the above title holds for the machines. And presumably in a Wing there must be old pilots as well as young ones.

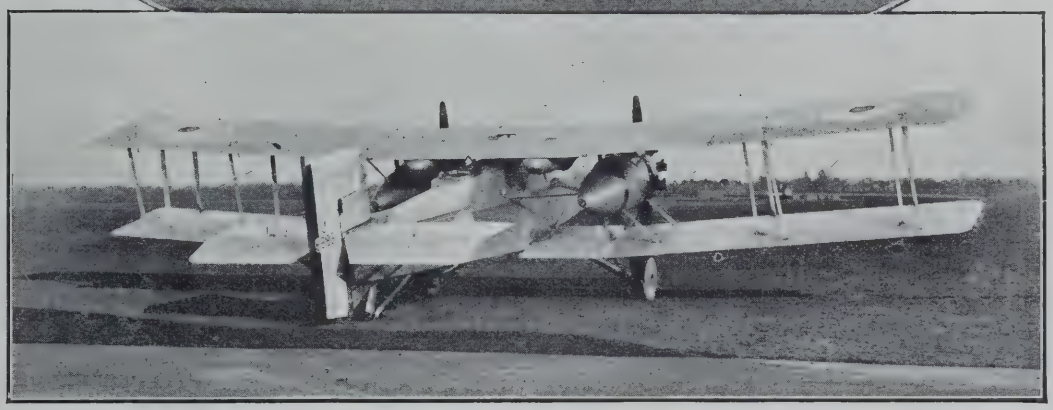


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Looping photographs by courtesy of "Flight."







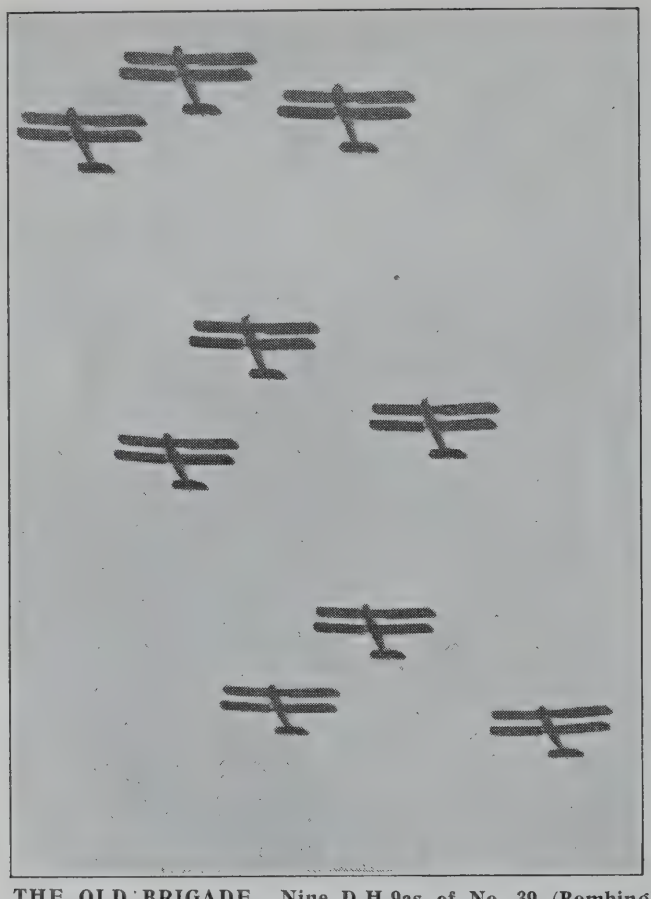
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THE OLD BRIGADE.—Nine D.H.9as of No. 39 (Bombing) Squadron rehearsing formation flying. This Display should be the very last Farewell Performance at which D.H.9as or any wartime machines appear.

submarine placed in the middle of the aerodrome. Incidentally one spectator on arriving at the aerodrome and seeing the submarine just appearing out of the ground was quite convinced that he had discovered a secret airship base.

The Display itself takes place on Saturday fortnight at Hendon and the proceeds as usual will go to the R.A.F. Memorial Fund.—G. D.

THE "DAILY MAIL" LIGHT AEROPLANE PRIZE.

On June 8, *The Daily Mail* announced the offer of a prize of £5,000 to be divided between the winners of a light aeroplane contest to be held at some date as yet unsettled in the summer of 1926.

The contest is to be open to two-seater dual-control machines fitted with engines which shall not exceed 170 lbs. in weight, both machines and engines to be of British manufacture.

The main competition will consist of flights aggregating at least 2,000 miles, in not less than 20 stages, which must be covered at an overall average speed of not less than 50 m.p.h.

A minimum useful load of 340 lbs. must be carried, but the competing machines will be free to carry any excess load which may be permitted by their certificates of airworthiness.

Prizes will be awarded on the basis of the fuel consumption per unit of useful load carried—that is to say on the specific efficiency of the aeroplane on a useful ton-mileage per lb. of fuel.

The precise rules under which the contest will be held are still under consideration by the Royal Aero Club, who will naturally supervise the meeting—in collaboration with the Air Ministry. But it is stated that a series of eliminating trials will precede the main contest, and that these preliminary tests will be designed to secure that the competing machines possess such qualities as low-landing speeds and quick pull-up, ability to take off in a limited space and climb at a sufficiently steep angle, that they shall be adequately easy to to fly, shall be easily folded for transport and stowage, and in general shall possess all those qualities which were sought for in the Air Ministry's competition of 1924.

It has been common knowledge in the aircraft world that a competition for a substantial prize on such lines as these was in contemplation for the summer of 1926, and a fairly definite announcement that this competition would be open to two-seater dual-control machines with engines weighing not more than 170 lbs. and that it would involve tests extending over at least 2,000 miles of flying. It has generally been assumed that the Air Ministry itself had the intention of offering substantial prizes for this contemplated contest, but it appears that all attempts to induce it in this direction have so far failed.

The object which *The Daily Mail* professes to have in mind in offering this substantial sum is the encouragement of the production of cheap and reliable light aeroplanes and the consequent popularisation of flying by the private individual. This is undoubtedly an extremely worthy object, and there is no doubt that the competition will do something towards the desired end. Whether it will do it to the best effect is a very open question.

Naturally a great deal will depend on those details of the contest which are not yet settled, but the evidence already available is sufficient to indicate that the competition will in fact be one of those complicated affairs in which the successful rule-wangler will carry off chief honours, and not the producer of the best light aeroplane for the purpose which the promoters have in view.

£5,000 in prizes by itself is quite sufficient to tempt an aircraft designer to produce a machine for the purpose of gaining some substantial share in the prize, and some large degree of publicity, even though he knows perfectly well that his prospect of selling even one such machine in the open market is microscopic.

So far at least there is nothing disclosed which indicates in what way the really essential features of the popular light aeroplane—low first and operating costs—are to be secured on the part of competing machines. It has always been pointed out, in criticising the announcement by the Royal Aero Club of the engine weight limit which was to be adopted, that there is no reason why a 170-lb. engine should necessarily be either simple or cheap, and that it might eventually become an exceedingly high-powered unit.

It may be thought that the fact that final awards were to be made on a fuel economy basis would secure that engines giving very large outputs for their weight would thereby be handicapped. This is not the case. When the original Lympne competitions on a mile-per-gallon basis were in prospect the question was discussed at length in this paper and it was shown that two equally efficient aeroplanes, one with a large engine flying at a high speed and one with a small engine flying at a correspondingly reduced speed should attain the same number of miles per gallon in a flat calm, and that in a wind the faster and higher-powered machine would have an advantage. The same thing is true in this case. And as the result will be taken over a long series of flights, and not on one flight in picked conditions, the advantage will be more definitely with a high-speed machine than was the case at Lympne in 1923.

Moreover, fuel economy is not a very important item in the total cost of running a reasonably efficient moderate-powered aeroplane. At first sight the difference between, say, 60 and 30 m.p.g. looks to be a large one. But with petrol at a price in the vicinity of 2od. per gallon, the difference in cost is one-third of a penny per mile—which is not, and is not likely to be, a large proportion of the total running cost of an aeroplane for a long while. It is a difference which will not vitally influence the possibility of selling aeroplanes to those who are in the least likely to be able to buy them—particularly as it costs money to obtain the higher fuel economy.

The competition can scarcely fail to be interesting and to produce useful results. But it is very unlikely that any of the prize-winners will become popular aeroplanes.

If *The Daily Mail* feels certain that a reasonably cheap and safe and reliable two-seater aeroplane can be sold to the public in quantities there is only one way that one can think of that is likely to procure that aeroplane more rapidly than such a machine will be evolved in the normal course of events.

Let it inaugurate a competition on a performance basis—that is a series of getting-off, landing, climbing, manœuvring, etc., tests—with a 2,000-mile reliability eliminating trial. And let it offer as a prize an order for say 100 of the winning machines at £175 apiece—and proceed to sell the said machines to the public at £200.—W. H. S.

R.A.F. SPORTS FINALS.

The R.A.F. Athletic Championships will be held at the R.A.F. Stadium, Uxbridge, on Wednesday, Thursday and Saturday, June 17, 18, and 20, beginning at 2.30 p.m. each day.

AIR POLICY.

In the House of Commons on May 25, Rear-Admiral Sueter asked the Prime Minister whether it was the settled policy of the Government to maintain the Air Ministry as the Department responsible for aviation and air defence and not to diminish its responsibilities or to absorb it in the Admiralty or any other Department. The Prime Minister said that no change was at present contemplated in the existing responsibility.

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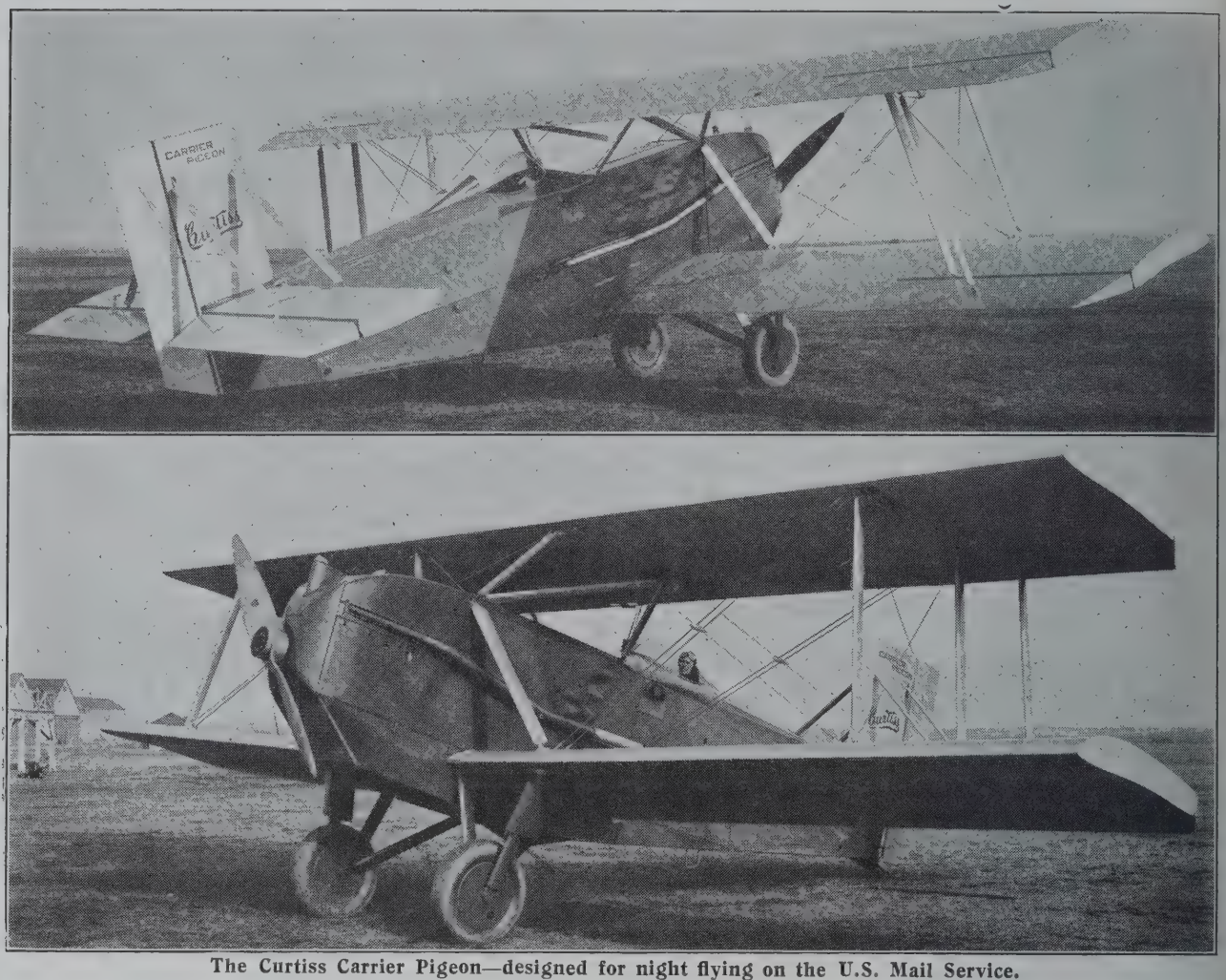


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NEW AMERICAN COMMERCIAL AIRCRAFT.



The Curtiss Carrier Pigeon—designed for night flying on the U.S. Mail Service.

Two new American aircraft, both of them designed with a special view to the requirements of the U.S. Night Mail service, New York to Chicago, have recently been produced, one to the designs of Mr. H. C. Mummert, by the Aerial Service Corporation of Hammondsport, N.Y., and the other by the Curtiss Co. These two machines are by no means unlike each other, and are particularly interesting as representing an effort to deal with a most promising field for commercial air transport, which has been entirely neglected in Europe.

The Curtiss Carrier Pigeon.

In general arrangement this is of the normal tractor biplane type, and is fitted with the 400 h.p. Liberty engine. The pilot is seated well behind the wings and well up in the fuselage, and has in front of him the mail compartment, which is a very stoutly-built affair, and completely waterproof.

The detailed design of the machine has been carefully considered with a view to rendering the machine robust and serviceable, and to reduce to a minimum the number of spare parts which need to be kept in stock.

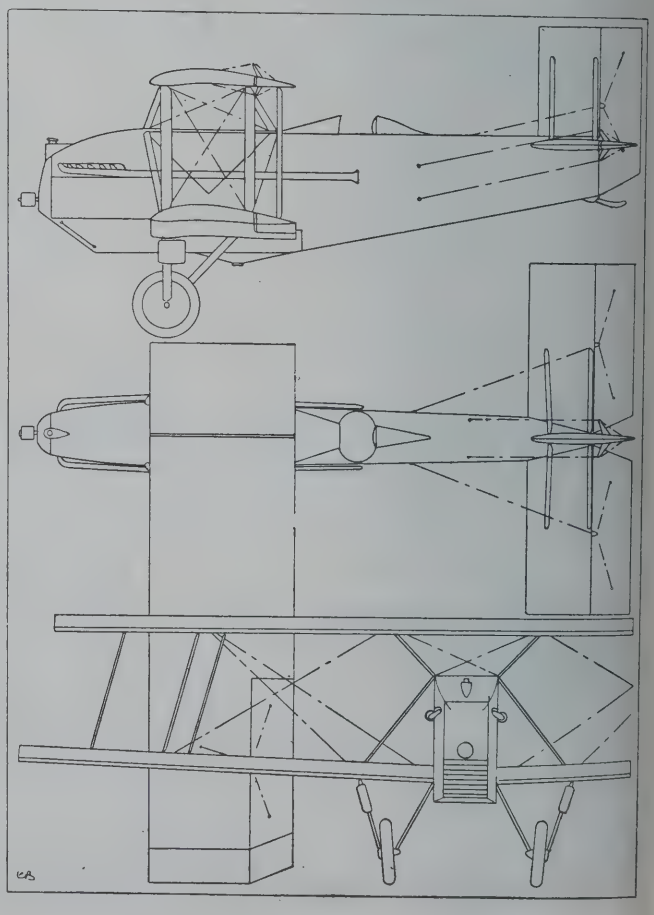
Thus, top and bottom wings are interchangeable, and rudder ailerons and elevators are equally so.

The fuselage is of the welded steel tube type originated by Fokker, and now practically standard in America. The wings are of standard timber-framed type, mainly spruce and three-ply, and the machine has an axle-less type of undercarriage in order to reduce the risk of turning over when landing in long grass or standing crops. The shock-absorbers are of the compressed rubber type.

The wings are of the single-bay type, and, owing to the fact that there is no centre-section in the upper wing, and that top and bottom wings are interchangeable, the span of the bottom wing exceeds that of the top one by the width of the fuselage. Also the interplane struts slope inwards upwards.

Specification.

Span (top)	39 ft. 1½ in. (11.95 m.)	Length	28 ft. 9½ in. (8.75 m.)
Span (bottom) ...	41 ft. 11 in. (12.7 m.)	Height ...	12 ft. 1 in. (3.68 m.)



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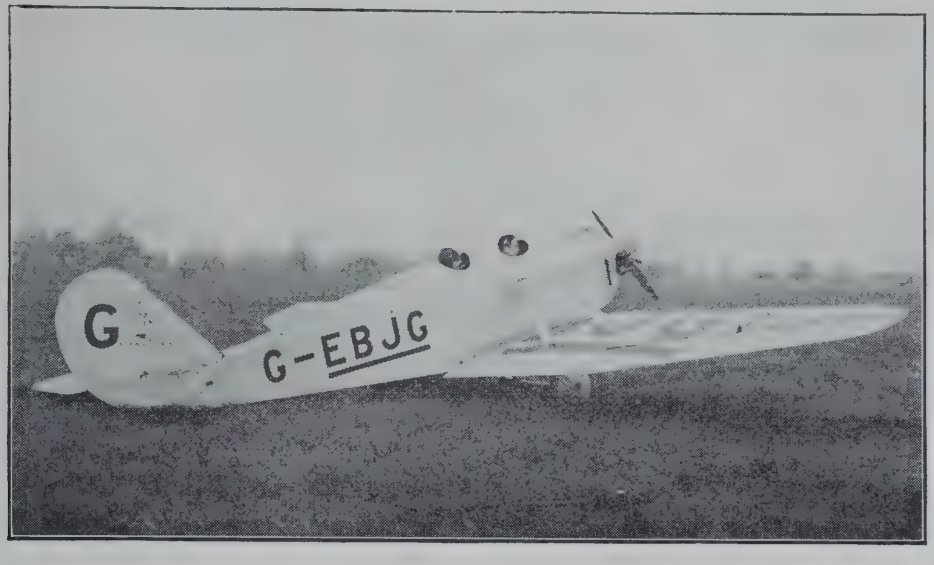
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Wing area 505 sq. ft. (46.7 m².)
Weight empty 3,045 lbs. (1,380 kg.)
Weight loaded ... 4,900 lbs. (2,221 kg.)
Mail load (with full tanks) 1,080 lbs. (454 kg.)
Engine Liberty 400 h.p.
Wing loading 9.78lbs./sq. ft. (47.6 kg./m².)
Power loading...12.3 lbs./h.p. (5.55 kg./h.p.)
Max. speed 120 m.p.h. (194 km.h.)
Ceiling ... 16,700 ft. (5,100 m.)
Range...725 miles (1,170 km.)

THE AERIAL MERCURY.

This machine, built by the Aerial Service Corporation, is of very similar general design to the Carrier Pigeon and was produced for the same purpose. It can, however, be fitted with a smaller lower wing than is used for night work, and then becomes a somewhat faster machine, suitable for day service.

In the larger-winged edition it has the same characteristic as the Curtiss machine, of a greater span on the lower wing than on the upper, and for the same reasons—that the upper and lower wings are interchangeable and that there is no upper centre-section. It is also of the single-bay type, and has interchangeable control surfaces.

The same general disposition of the mail compartment between engine and pilot, and a far aft position for the latter, is found in this machine, it being obvious that the safety of the pilot in a forced landing in the dark is a major consideration in the design of American machines for night service.

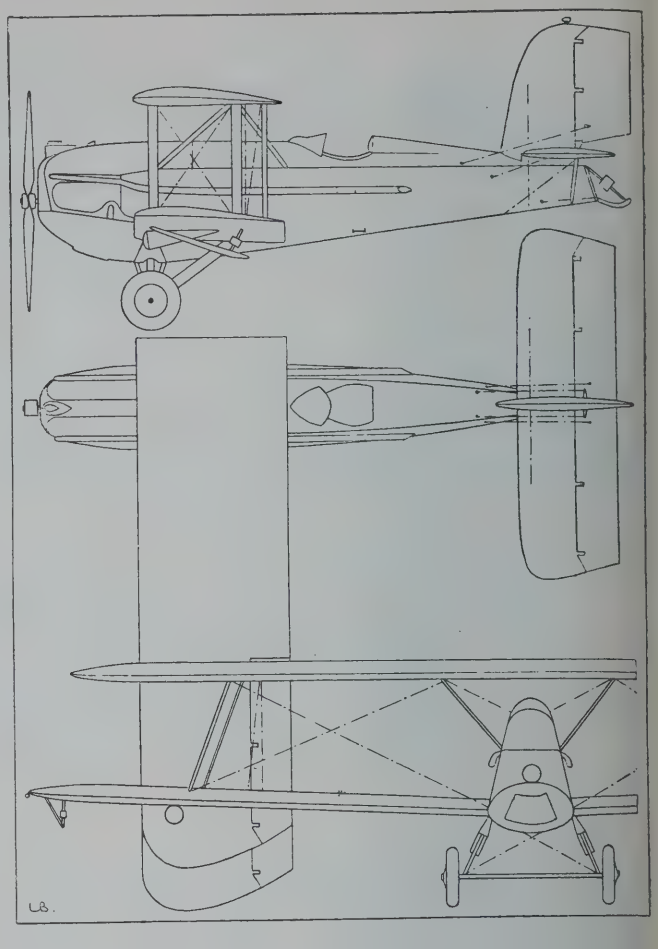
The Aerial Mercury is of normal timber construction throughout, the fuselage being of the ply-wood covered variety. The machine is intended for the same mail load—1,000 lbs.—as the Curtiss type, but has a rather less range.

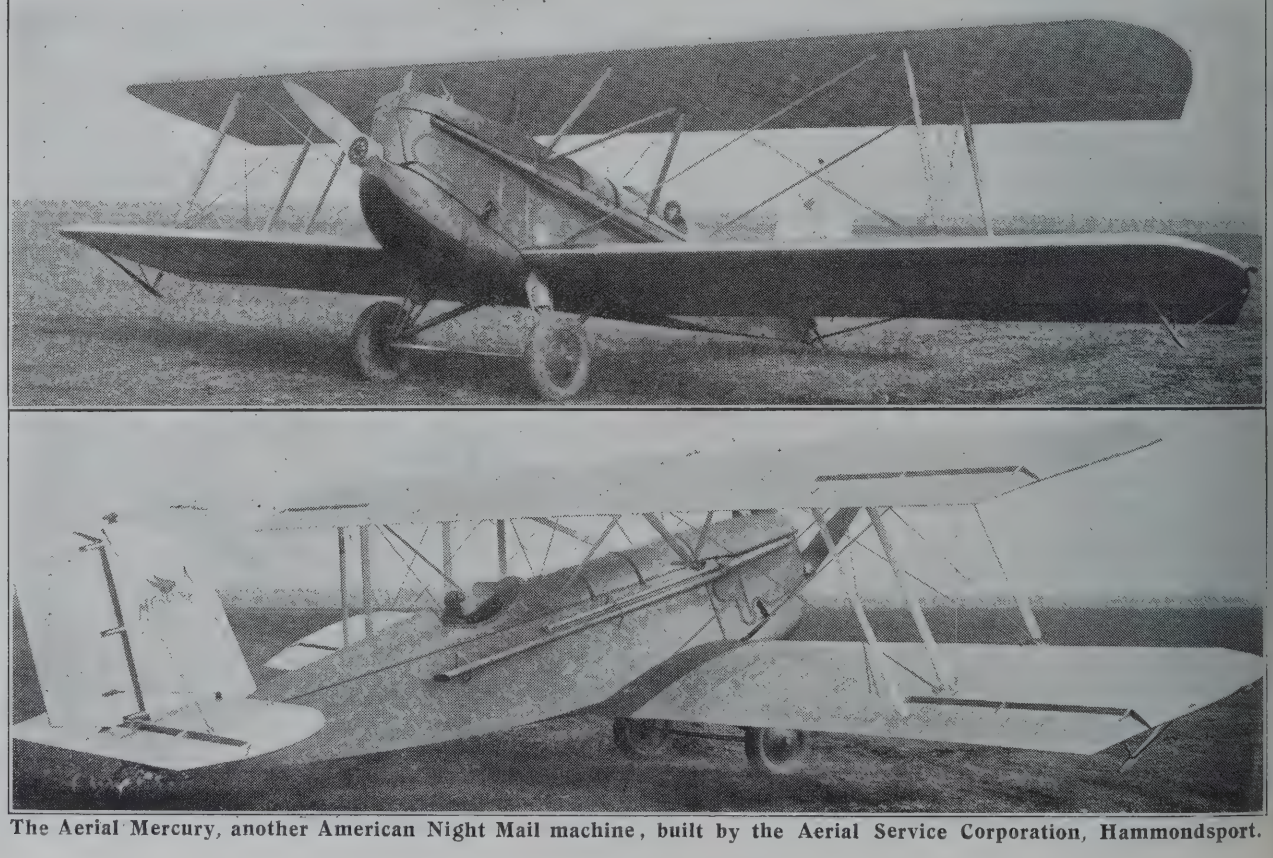
SPECIFICATION (NIGHT-FLYING TYPE).

Span (top) 42 ft. 11 in. (13.1 m.)
Span (bottom) ... 47 ft. 11 in. (14.64 m.)
Length 28 ft. 6 in. (8.7 m.)
Height...11 ft. 4 in (3.46 m.)
Wing area 598 sq. ft. (55.5 m².)
Weight empty ... 3,640 lbs. (1,650 kg.)
Weight loaded 5,515 lbs. (2,500 kg.)
Mail load 1,000 lbs (454 kg.)
Engine Liberty 400 h.p.
Wing loading...9.2 lbs/ sq. ft. (45.1 kg./m².)
Power loading...13.8 lbs./h.p. (6.2 kg./h.p.)
Max. speed 125 m.p.h (202 km.h.)
Stalling speed 52 m.p.h (84 km.h.)
Ceiling ... 16,400 ft. (5,000 m.)
Range at 110 m.p.h. (177 km.h.)...500 miles (800 km.)

The smaller-winged version, for day work, differs from the above in the following respects :—

Span (bottom) 33 ft. 4 in. (10.17 m.)
Wing area 466 sq. ft. (43.4 m².)
Weight empty ... 3,490 lbs. (1,585 kg.)
Weight loaded ... 5,365 lbs. (2,430 kg.)
Wing loading 11.5 lbs./sq. ft. (56 kg./m².)
Power loading...13.4 lbs./h.p. (6.07 kg./h.p.)
Max. speed 135 m.p.h. (218 km.h.)
Stalling speed 57 m.p.h. (92 km.h.)
Ceiling...14,900 ft. (4,560 m.)
Range at 115 m.p.h. (185 km.h.)...560 miles (900 km.)





The Aerial Mercury, another American Night Mail machine, built by the Aerial Service Corporation, Hammondsport.

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ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 20; Tuesday, 23; Wednesday, 25; Thursday, 20; Friday, 24; Saturday, 24; Sunday, 14.

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Amsterdam—Rotterdam—London: Machines 12, passengers 39.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

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Total number of trips by British machines: 97, carrying 433 passengers. Foreign machines: 50, carrying 201 passengers.

Comparative Figures:

For week ending June 7:
Machines, 150; Passengers, 614; Crews, 191; Total personnel, 805.

Corresponding week, 1924:
Machines, 117; Passengers, 372; Crews, 183; Total personnel, 555.

Corresponding week, 1923:
Machines, 166; Passengers, 345; Crews, 171; Total personnel, 516.

Corresponding week, 1922:
Machines, 134; Passengers, 258; Crews, 175; Total personnel, 432.

Corresponding week, 1921:
Machines, 97; Passengers, 299; Crews, 111; Total personnel, 410.

Corresponding week, 1920:
Machines, 97; Passengers, 299; Crews, 111; Total personnel, 410.

Croydon Notes.

The fine weather in which we are now happily involved is having the natural result of bringing increasing traffic to the air lines. All will hope that this weather will be allowed to continue. In 1921 we had a similar perfect summer and so everyone (speaking generally, but emphatically not aeronautically) grumbled, and the papers screamed about droughts and all sorts of other scares. The net result of this was that we were given three of the wettest possible summers in succession to "larn" us. Let us hope that we have now been duly "larned."

Now that the 0/400 has duly died in its rural retreat behind the hangars, its place has been taken by the old original Vulcan. Other Vulcans have been given an extra 100 h.p. and are the backbone and almost the wishbone as well, of the service. The other under-powered one has been sent to Wembley, where, with the old original Napier-Bristol, it is exhibited as an example of Civil Aviation. As sightseers only really look at the cabins of these machines and do not understand the outside, the idea is really nothing like so foolish as it sounds, and it is proving to be quite good propaganda.

On Saturday, June 20, Imperial Airways Ltd. will open a twice-daily service to Ostend. This should prove an extremely popular route as it is only about an hour's trip from Croydon.

Mr. Olley had his leg pulled by an American passenger on Saturday. When just leaving the coast in the Vimy Mr. Olley looked round and saw an arm and leg sticking out of a window. He at once landed at St. Inglevert and wrathfully demanded an explanation. He was told that the American was pretending to his sister that he was going to walk the wing as in films to show what a devil he was. It was a silly joke but as even Mr. Olley himself would find it difficult to squeeze himself through the Vimy window there was not much harm done really.

The King's Cup Race.

It has been decided that Croydon and not Hendon shall be used for the starts and finishes of the King's Cup Race which is to take place on July 3 and 4.

The controls on the first day will be Harrogate (The Stray), Newcastle (Town Moor), Renfrew aerodrome, Shotwick (Sealand aerodrome), and Bristol. There will be a non-landing control at Blackpool Tower.

On the second day the controls will be taken in the reverse order.

The London Aero Club.

Above is the official title of the Light Aeroplane Section of the Royal Aero Club. The headquarters will be at Stag Lane and not at Hendon.

The Gloster Racers.

Mr. Hubert Broad is conducting tests at Felixstowe with the Bamel (Napier *semper eadem*) fitted with a pair of all-metal floats built by Short Bros. Besides being used as a practice machine for the Schneider pilots, she is also being used to test floats for the Gloster III, the machine which is now in course of construction for this year's Schneider Trophy Race.

The Bamel as a seaplane is very satisfactory and the tests already made show that if she had been fitted with floats for the last Schneider Race at Cowes, the Royal Aero Club might still own a hat-stand worthy of the Club.

Gloster II, the sister machine of the seaplane racer which sank at Felixstowe last year, which is fitted with wheels, has been flown satisfactorily at Cranwell by Mr. Larry Carter. Up to now, however, it has not had a satisfactory airscrew and so its top speed has not been up to expectation.

The Gor-Cock.

The following letter has been received from Mr. A. A. Fletcher (better known as "Tony" to his friends in the Trade), who returned some time ago from his work in Japan:—

I think I can solve the mystery surrounding that fearful wild-fowl "Gaw-cock." The word should properly be spelled "Gor-cock," "gor" being etymologically connected with "gorse" and meaning "moor" or "heath." There is, amongst the Hambleton Hills, in Yorkshire, a small lake or tarn known as "gormire," and in a description of it found in an old book called "Vallis Eboracensis," published in 1852, the following lines occur:—

"Where smooth, unruffled by the northern blast,
The crystal lake, in alpine rocks enshrined,
Reflects the verdant scene, and gently bathes
With silver waves around the grass-grown feet
Of woody hills. There to his cackling dames,
On blooming heaths and secret lawns dispersed,
The Gor-cock calls, the Sultan of the grove."

This, I think, sufficiently elucidates "Gaw-cock," but as for "Jack-cock," well, I candidly admit this has got me guessing.

(Signed) ANTHONY A. FLETCHER.

"Redcott,"
Newick, Sussex.

A Night-Flying Machine.

A new machine specially designed for night-flying and carrying illuminated signs, is nearing completion at Addlestone. It is being built by the A.N.E.C. Ltd. and has been designed by Mr. J. Bewsher. It is driven by three Siddeley Puma engines and is a biplane with folding wings.

The specifications to which it is being built include a low landing and maximum reliability. High speed is not required and is in fact not even desired.

The wing spread is 110 ft., length 32 ft., and height 14 ft. The top speed is 85 m.p.h. and cruising speed 65 m.p.h. Landing speed is 48 m.p.h. The endurance at cruising speed is five hours and she will climb to 3,000 ft. in six minutes. She will be able to carry a pilot and three or four passengers, oil, fuel and water for five hours' flying, and apparatus for sky signs weighing 1,175 lbs.

Mr. Hope, late of the late Handley Page Transport Ltd., and the De Havilland Hire Service, will be the pilot of the machine. The machine should be ready for flying within a month.

THE GLOBE TROTTERS.

ROME—MELBOURNE—TOKIO.

Commandante the Marchese di Pinedo, who is attempting to fly from Rome to Tokio via Melbourne on a Savoia S.16 ter flying boat (450 h.p. Lorraine-Dietrich engine), arrived at Broome, W. Australia, on May 31, thereby having covered the first stage of 18,020 km. from Rome to Australia.

On June 1 he left Broome, and on June 3 it was reported that he had arrived at Carnarvon.

On June 3 he arrived at Perth, having covered the 530 miles from Carnarvon, in 5½ hours.

On June 4 he left Perth for Albany, but near Cape Leeuwin, slight engine trouble forced him to return to Bunbury. The next day he left for Albany, where he arrived later in the day, but owing to the rough sea, water got into the ignition system and he was unable to get off again.

On June 6, the ignition trouble having been corrected, he left Albany, and arrived at Israelite Bay.

On June 8, he flew across the Great Australian Bight from Israelite Bay, and landed in the outer harbour at Adelaide, at noon. He was given an enthusiastic welcome at the quayside, and later was given an official and civil reception.

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The Latest Green Engine.

Readers of THE AEROPLANE were reminded last week that the credit for the longest flights ever made by a light aeroplane still stand to the credit of the 35 h.p. Green engine in the Baby Avro piloted by Mr. Bert Hinkler, who in 1920 flew non-stop 700 miles from Croydon to Turin and the following year 800 miles from Sydney to Bundaberg in Australia. It is also well to remember that in the former flight he had to reach a height of 12,000 feet after covering about three-quarters of his journey in order to get over the Alps.

Mr. Fred May of the Green Engine Company has by no means lost interest in small high-speed engines in spite of his success with the big engines which he has been supplying to the Admiralty for coastal motor boats, otherwise known as "scooter-boats." He himself put up a very good performance on June 6th in the Eliminating Trials for the selection of the British team for the competition for the Duke of York's International Motor Boat Trophy. His boat was heavier and therefore somewhat slower than the winning boats, but the little 1,500 c.c. engine with its 70 bore by 80 stroke, running at about 4,000 r.p.m., never missed a beat in 70 miles at full power and was fit to do it all over again immediately afterwards.

One learns that there is a probability of seeing a similar engine specially adapted for light aeroplane work being seen on test before very long. Naturally 4,000 r.p.m. sounds a very big speed for an aero engine, considering that 1,200 r.p.m. is generally considered to be about the highest permissible rate of revolution for a direct driven airscrew. But experiments in America seem to show that very much higher speeds can be attained with reasonable efficiency and presumably our ideas of airscrews will have to be revised accordingly.

The probability is that with a Reed metal airscrew 4,000 r.p.m. would be quite useful in a light aeroplane. And the small Green engine has proved that it can maintain such high revolutions for lengthy periods. Future developments will be watched with considerable interest in view of the newest *Daily Mail* Prize, the first *Daily Mail* Prize having been won with a Green engine.

Aviation's Millionth Milestone.

Their first million miles' flight on spirit supplied exclusively by the Shell Company has just been completed by the fleet of Imperial Airways—an eloquent tribute to the security of aviation and the reliability of the motor spirit consistently used.

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"Cerric" Cellulose Enamels for Aircraft.

Reference has been made in the past to the use of the "Cerric" Cellulose Enamels manufactured by Cellon (Richmond) Limited, but hitherto the references have only dealt with the use of these materials for motor-car bodies, motor accessories, etc.

It is very interesting to note that these materials are now being used in connection with aircraft construction and in particular the "Cerric" Black Enamels are being used on cowlings and fairings and all metal parts which are exposed to the atmosphere and which have hitherto been stove enamelled.

"Cerric" Wood Solutions are used to replace French Polish for instrument boards, and to replace ordinary varnish for three-ply coverings and on struts, etc. For use inside cockpits "Cerric" Enamels in various shades are used to replace ordinary paints, etc.

These materials are as usual applied by means of spray and having regard to the rapidity of drying tend very materially to speed up output.

PERSONAL NOTICES.

FORTHCOMING MARRIAGE.

CARNEGIE—REAVELL.—The engagement is announced of Flt. Lt. David Vaughan Carnegie, A.F.C., only son of the Rev. J. D. and Mrs. Carnegie, Stamford, Lincolnshire, to Enid May, only daughter of Mr. and Mrs. W. Reavell, Broadwater, Ipswich.

MARRIAGES.

BENNETT—WOODBRIDGE.—On June 1, in London, Vyvian George Anthony Bennett, Flg. Off., R.A.F., only son of the late T.. A. Bennett and Mrs. Bennett, of 8, Eccleston Square, S.W.1, to Nell, daughter of Mr. and Mrs. J. A. Woodbridge, "Pelham," Harrow.

DAVIES—TUDOR.—On June 4, at St. Paul's Church, Camberley, E. Dayrell Handley Davies, Flg. Off., R.A.F., elder son of Capt. and Mrs. Dayrell Davies, of South Testwood, Totton, to Aldyth, eldest daughter of Brig.-Genl. and Mrs. E. T. Tudor, of Waverley Court, Camberley.

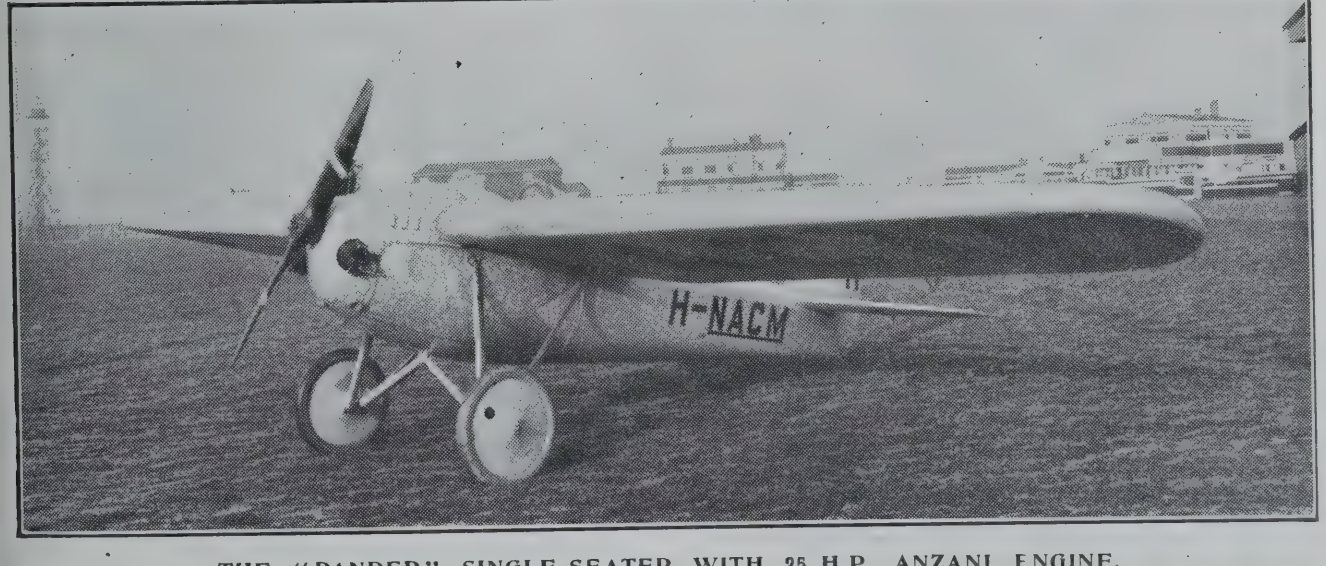
RIDLEY—McALPINE.—The marriage took place on June 4, at St. Mark's, North Audley Street, of Sq. Ldr. C. A. Ridley, D.S.O., M.C., R.A.F., youngest son of Mr. and Mrs. L. C. Ridley, of Holland Park, and Miss L. E. McAlpine, daughter of Mr. and Mrs. R. McAlpine, of East Grinstead. Among those present were Air Commodore and Mrs. Longmore, Air Commodore and Mrs. Munro, Air Commodore T. C. R. Higgins, Wing Cdr. and Mrs. Whitelock, Wing Cdr. and Mrs. Tyssen, Capt. T. B. Marson, and Sq. Ldr. J. C. Russell (best man).

SORLEY—GAYFORD.—On June 6, at St. Mary's Church, Hadleigh, by the Very Rev. Dean Carter, Flt. Lt. Ralph Squire Sorley, D.S.C., D.F.C., R.A.F., to Mary Eileen Gayford.

BIRTH.

ADES.—On June 4, at The Poplars, Balham, to Marjorie Ailsa (*née* McIntosh), wife of Flt. Lt. Esmond Selby Ades, R.A.F.—a son.

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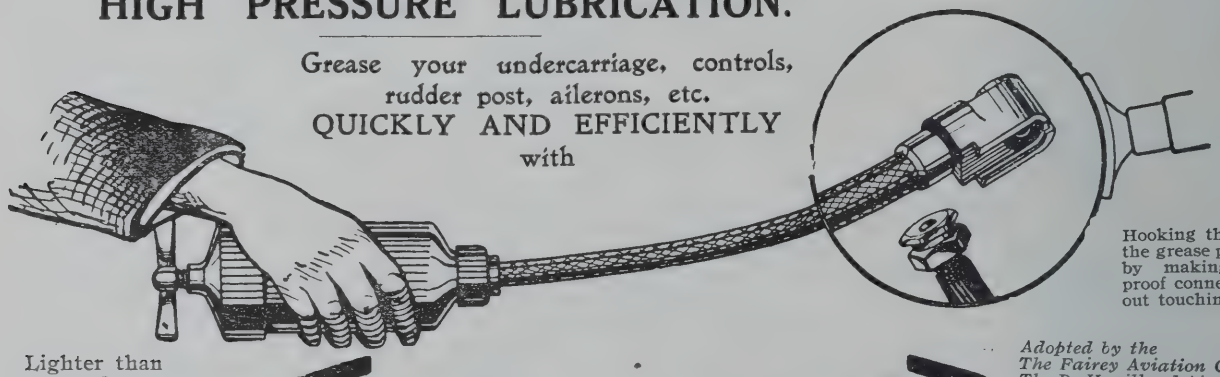
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Edited by C. G. Grey

Vol. XXVIII. No. 24. SIXPENCE WEEKLY. [Registered at the G.P.O. as a Newspaper

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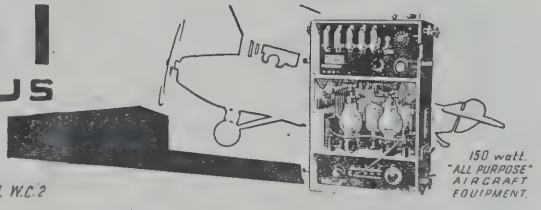
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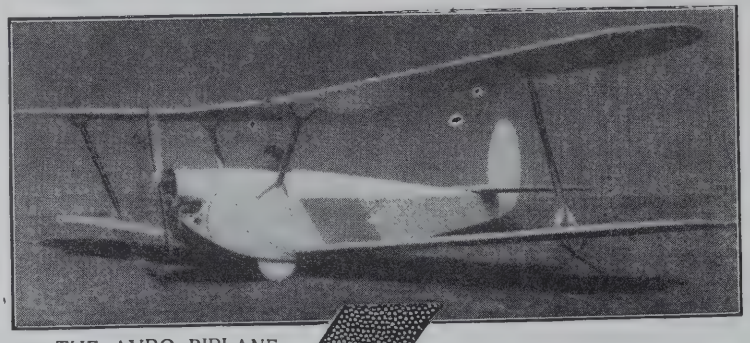
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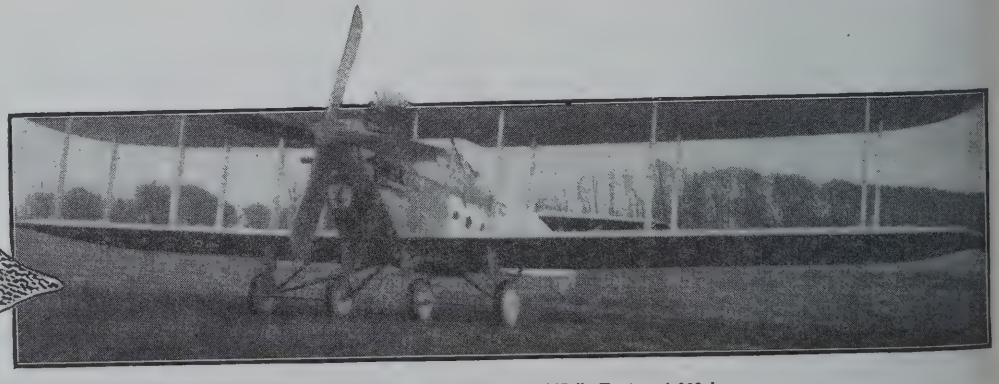
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ON THE SITUATION IN THE FAR EAST.

Among those who take an intelligent interest in World Politics there is never any question about whether there is going to be war between America and Japan over the control of the Pacific. The only questions are when? and why? One believes that most naval authorities put the date somewhere within the next two years and even the most optimistic (or pessimistic, according to point of view) do not believe that the present state of exasperated affection between the Americans and the Japanese can last for more than ten years.

Also there are people in the United States who believe that Japan cannot go to war for ten years or more because of the damage done to the Japanese Fleet and naval stores by the earthquake two years ago and the loss of life and destruction of property among the Japanese people in the same affair. As a matter of fact the damage done, considered as a percentage of the strength of the whole Japanese Nation, was practically negligible. The number of deaths which imaginative journalists guessed as being anything between 200,000 and 20,000 was probably very much nearer 2,000. The disorganisation of commerce was very slight. And no capital ship of the Japanese Navy was even very seriously damaged. And Japan's Flying Services were not even touched. Therefore one doubts whether the earthquake will have had any effect on the date of the war at all.

Consequently intelligent people will do well to watch very carefully every fresh turn of politics in the Pacific, so as to avoid being surprised by the arising of some acutely irritating position which may become an actual *casus belli*.

Regular readers of THE AEROPLANE will remember that in the issue of this paper dated March 4 particulars were published of what, according to the *Lokalanzeiger* of Berlin, purported to be the secret clauses of a treaty between Russia, Japan and China. On the same date there were published in this paper, on the authority of *The Chicago Tribune*, particulars of a memorandum expounding the principles of British policy in view of the new situation in Europe, a policy which amounts to an Anglo-German pact. In this memorandum the general principle was laid down that Germany must be brought into association with the other Western European nations because Russia "has ceased to be European" and because "aerodynamics have transformed the Channel from a barrier of great military importance into a mere ditch devoid of all military value."

THE PRESENT POSITION.

At the moment the position in the Pacific is such that it may easily develop into the expected war between the White and Yellow peoples. The riots in Shanghai have given the Japanese an excuse to send for warships. *The Times* correspondent, cabling from Shanghai on June 14, said that the Japanese Admiral there had telephoned home for four first-class destroyers.

A week earlier *The Times* correspondent in Tokyo had reported that the Japanese Cabinet had authorised the Japanese Minister of the Navy to act with discretion (did this mean "at his discretion?") in protecting Japanese nationals in Shanghai, and two destroyers which had been sent in that direction a fortnight earlier had returned to Port Arthur, with the result that there were only four river craft at Shanghai.

That is a typical example of Japanese tactics. A small force is sent and is then withdrawn, to inspire confidence. And a little later a much bigger force is sent. We may now expect in due course to see Japanese warships sent to Shanghai complete with aircraft and very possibly accompanied by proper aircraft-carrying ships.

There is also trouble in Pekin, where the various foreign legations are feeling distinctly anxious about their positions at the moment. This fact also will be an excuse for Japan to send warships into the Yellow Sea. In fact, with very little further excuse Japan would have apparent justification for mobilising the whole of her Fleet and Army and occupying parts of China.

In this connection the fact should be noted that in some of last week's newspapers the statement was made that in the event of serious internal trouble in China the Russians would take possession of the whole of Mongolia and that Japan would by agreement take possession of the whole of Manchuria. That would mean that there would be direct communication by the shortest geographical route between Russia and Japan.

A RUSSIAN ADMISSION.

Furthermore, there is great significance in the attitude of the Russian newspapers at present. The correspondent of *The Chicago Times*, cabling from Riga on Friday, said that the disorders in China were filling the front pages of the Moscow Press, and added:—

"*The Pravda* and *Isvestia* and other papers comment editorially that the Russian proletariat must prepare to assist their yellow brothers in China, who are preparing to expel the Whites, and form a Soviet Government."

So far as one can recollect this is the first time that any paper produced in the English language has published a definite claim by any Russian publication that the Russians are Yellow and not White. Of course readers of THE AEROPLANE are perfectly familiar with the fact as a fact, but only because it has been published as an *ex parte* statement by the present writer. Here, however, we have the statement not as an admission but as an actual claim of brotherhood by the Russians.

From a variety of sources the fact is made clear that the rioting at Shanghai and Canton and the trouble in Pekin, is almost entirely the result of the work of Bolshevik emissaries from Russia. And evidently it is the policy of the Bolsheviks to break up the power of the present Chinese Government just as they broke the power of the Tzarist Government in Russia itself, so that China can be partitioned between Russia and Japan.

THE POSITION OF THE U.S.A.

Any such partitioning and more especially the occupation of Manchuria by the Japanese must almost inevitably bring war with the United States. Of course the U.S. Government would make diplomatic representations, and there would be *pourparlers* and conversations and so forth. But no amount of tact would get the Japanese out of Manchuria when once they had taken control. And war would be bound to follow sooner or later.

One gathers that the newspapers of the United States have been influenced, possibly not officially but certainly from official sources, to keep very quiet on the Japanese question. Evidently the U.S. Government fears that if the U.S. Press continue to expose Japanese policy and to advocate preparedness for war, the war may come before America is ready for it.

But, as one has so often said, the worst fault of the Americans is that they are so desperately English. Consequently the U.S. Government may rest quite assured that no amount of such anti-Japanese propaganda will ever result in the expenditure of money by America in preparing for war with Japan. All that the newspapers can do at best is to prepare the people in the States for the idea of war with Japan, so that when war actually breaks out men and material will be more easily forthcoming with which to fight the Yellow people.

The present situation is complicated by the fact that the U.S. Pacific Fleet which has recently concentrated at Hawaii with the addition of a number of units of various sorts from the U.S. Atlantic Fleet, is now either on its way or just starting to Australia to promote good feeling between the Australian people and the Americans.

Whether the U.S. aircraft carrier *Langley* is in that U.S. aircraft fleet one does not know at the moment, but one hopes that she is so that the Australians may have demonstration of what naval aviation really means.

The little squadron of British cruisers which visited Australia last year apparently carried no aircraft, and judging by his public utterances the Admiral commanding that squadron had no interest in aircraft and merely advocated strongly that the Australians should spend their money on building and maintaining a light cruiser or two. He apparently ignored the fact that such cruisers would only be fit to run away from a Japanese fleet and that for the cost of such ships Australia could build an air fleet big enough

DO NOT FORGET THE R.A.F. DISPLAY AT HENDON ON JUNE 27.

to keep any possible Japanese fleet away from the coast of Australia.

This American Fleet which is going to Australia is the biggest concentration of American warships which has ever existed in the Pacific. So far as one can gather it is not strong enough to fight the Japanese Navy. But in spite of this there are those in the States who regard the concentration of an American fleet as a threat to Japan which is likely to bring the war nearer. On the other hand there are those in the States who regard the concentration merely as an exposure of America's weakness at sea and in the air and argue that such weakness is merely likely to encourage the bellicose and bullying attitude of Japan.

Chang-tso-Lin's Influence.

Yet another factor in the situation is Chang-tso-Lin, the Manchurian War Lord, who has sent troops to Shanghai to assist in putting down the trouble there. According to *The Times* correspondent on June 14, Chang-tso-Lin's son Chang Hsueh-Lian arrived in Shanghai on June 13 with two thousand of his father's best troops.

The attitude of Chang Hsueh-Lian is something of a problem. According to *The Sunday Express*, some time in March last, he was supposed to be a protégé of Japan. But one knows that by some people of importance in the United States he is regarded as a potential ally against Japan. And it is hardly likely that a Chinese of such exalted rank and power would submit to being a servant of the Japanese Government. But on the other hand it is unlikely that the Japanese Government would accept him as an equal and an ally, unless of course he agreed to hand over Manchuria to the Japanese on the condition that they helped him to make himself Dictator or Emperor of the rest of China and accepted him thereafter as an ally.

This possibility is indicated by the strategical fact that Chang-tso-Lin seems to have located his headquarters at or near Pekin and that his son is operating at Shanghai which is some 700 miles South of Pekin and about 1,200 miles or more away from his father's former capital at Moukden. Incidentally there are some grounds for the rumour that Chang-tso-Lin has a certain number of aeroplanes which really fly and that these are piloted and maintained by Russians. The said Russians may be either purely mercenaries in Chinese pay or they may be working with Chang-tso-Lin by definite arrangement with the Russian Government.

Racial Grouping.

In any case here we have again what appears to be a natural racial grouping in the Pacific. The Russians and the Japanese and the Chinese are at any rate united in their antagonism to all white people in their immediate area. And on the other hand we have this concentration, for what it is worth, of American warships and aircraft in Hawaii with the prospective amicable visit to Australia.

From the political point of view this Australian visit may have far-reaching effects. The leading authorities on naval warfare agree that it is practically impossible for an American fleet to operate against Japan from America, but if the Americans can defend the Hawaiian Islands against Japanese attack they may use them as a half-way house to Australia so that when the war is really in full blast the American sea and air fleets may be able to operate from Australian bases.

In any case Australia is bound to be heavily involved in the war. The capture of the Philippines by the Japanese and the subsequent attempt to capture the Dutch Oil Islands is bound to be one of the first major operations of the war. The recapture of the Philippines from the Japanese by combined British and American forces can only be successful if operated from bases along a line from Singapore to Australia. Consequently any action which promotes friendly feeling between the Australians and the Americans is all to the good.

One does not say that the present situation is bound to develop directly into war but every development of the situation should be watched very carefully as each step is a step towards that war.—C. G. G.

ON THE GERMAN RUNDFLUG—II.

At the end of the article last week on the German Rundflug one promised to give a few notes on one's experiences in flying back to England. The threat is fulfilled hereafter :—

The Return Journey.

The morning aeroplane on June 2 from Berlin to Amsterdam to connect there with the Imperial Airways machine was timed to leave at 09.30. Germany not having adopted Summer Time that was equivalent to 08.30 English time.

When one arrived at the aerodrome one discovered that the Aero-Lloyd Dornier Komet which should have taken the morning service had been blown over in a high wind on the previous Saturday when taxying out to start from Amsterdam. None of the passengers had been hurt but the machine was too badly damaged to be repaired by Tuesday morning.

Consequently, in order to maintain the service, Imperial Airways had sent a D.H.50 piloted by Mr. O. P. Jones through from London on the Monday. Apparently it had arrived with one magneto showing signs of defects. This had been changed during the night and the machine was out on the aerodrome ready to start punctually at 09.30.

When the engine was run up before the passengers were embarked the engineer discovered that the other magneto had developed some defect or other. Consequently we were delayed for an hour and-half while the magneto was being changed. And so again one had ample opportunity of observing and admiring the efficiency of German mechanics.

Here again there were four of them all at work inside the engine cowl. And as at Hannover on the outward journey they worked in almost complete silence although everything depended on quick co-operation between them. They did their job calmly and quickly and this time the magnetos operated satisfactorily.

Then we struck a new trouble. The driving mechanism of the revolution indicator had gone wrong on the outward journey and a new rev.-indicator had also been fitted during the night. When the engine was run up for the second time Mr. Jones found that the indicator was showing 100 revs. per minute less than the number which the engine ought to give in order to deliver full power at the airscrew. Nevertheless the engine sounded as if it were giving its full power and it was running perfectly smoothly, so Mr. Jones decided to trust to his own knowledge instead of depending on his instruments.

Knowledge versus Science.

This is a principle which every experienced and reliable pilot will endorse. The pilot who depends on his instruments is much more likely to have a bad accident than the pilot who depends on his experience. If an engine sounds right and feels right to an experienced man it probably is right.

A pilot who believes his instruments and trusts to them against his own judgment is quite likely to attempt to take off with a full load on a defective engine simply because a defective rev.-indicator tells him that he is getting all the revolutions he wants. There are many old pilots who still believe that the more instruments you have on a machine the more likey you are to have accidents. And personally one is very much inclined to agree with them. The old dodge of tying a piece of string to the front of a machine to show whether it is side-slipping or not is still as good a lateral clinometer as most people need.

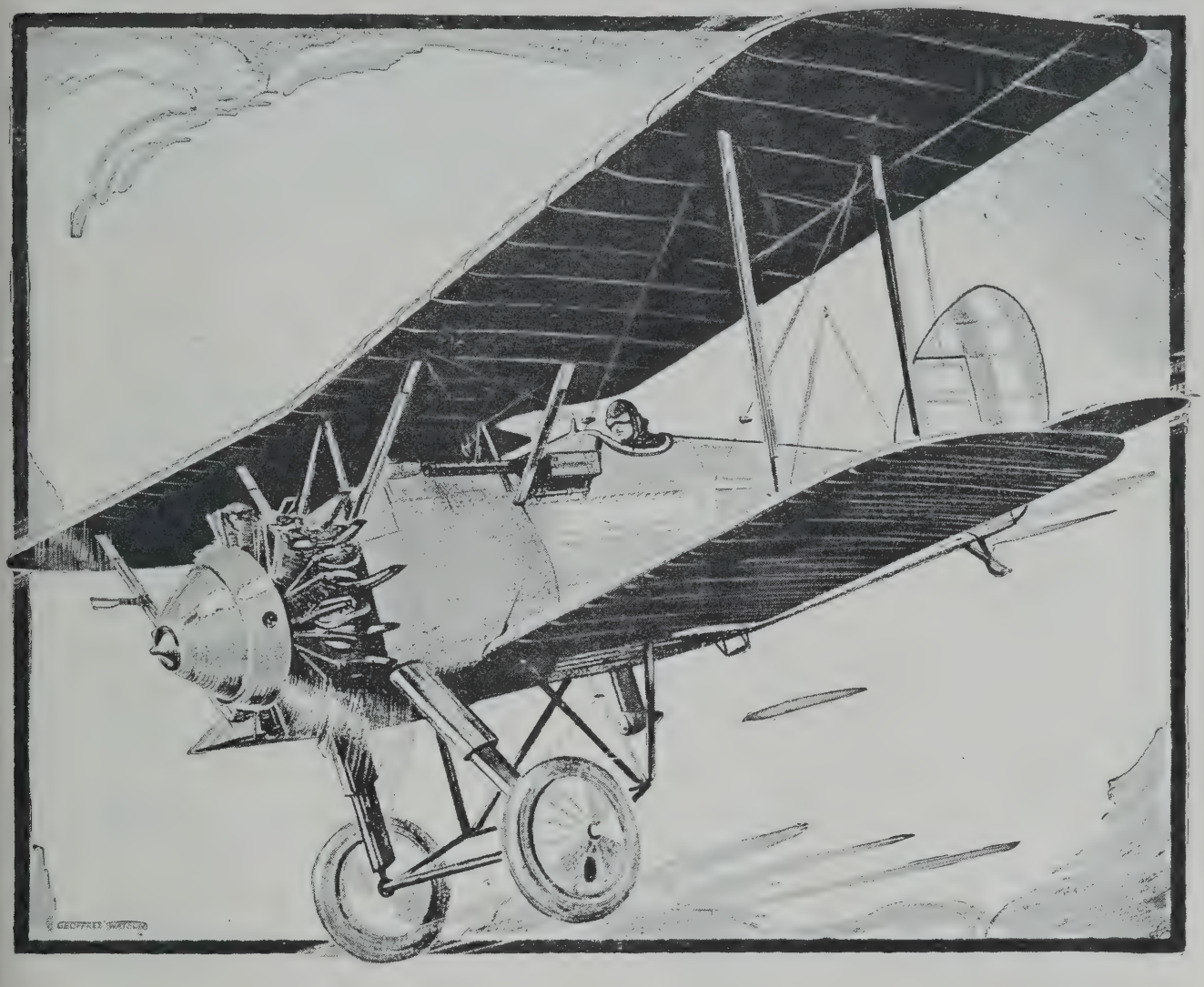
"Lying like a gasmeter" used to be a popular phrase. "Lying like an aeronautical instrument" might be a modern version of it. One would like to know how many people have stalled and just escaped a crash through depending on rev.-indicators and air-speed indicators instead of trusting to their own commonsense and experience.

The judgment of Mr. Jones proved to be entirely correct.



THE RUNDFLUG.—The machine in the foreground is a Ca spar C.T.2 entered and flown by Herr Jacobs. D.624 is a Stahlwerk Mark M.E.II.

DO NOT FORGET THE R.A.F. DISPLAY AT HENDON ON JUNE 27.



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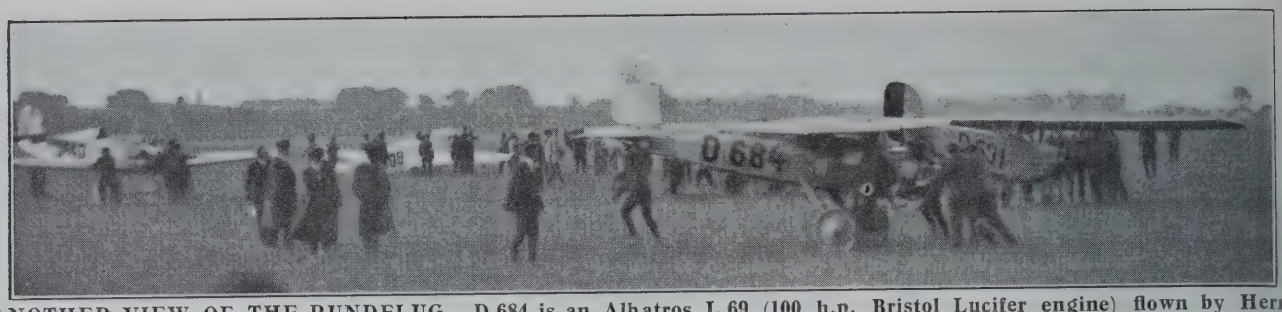
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ANOTHER VIEW OF THE RUNDFLUG.—D.684 is an Albatros L.69 (100 h.p. Bristol Lucifer engine) flown by Herr Student.

We had three full-sized passengers in that tiny little cramped cabin and one would judge considerably over the regulation 30 lbs. weight of luggage each. Mr. Jones took no chances about getting off. He went well out into the aerodrome, held the machine down on a good long run, and then lifted her into a beautiful climbing turn in which gravity and centrifugal force were perfectly balanced so that one sat naturally in one's seat without any inclination to slide towards the inside of the turn. Evidently he had power to spare in spite of his rev.-indicator.

The D.H.50.

Thereafter one discovered that the D.H.50 is about as nice a flying machine as one could wish, considered as a flying machine. For the first hundred miles or so the sky was overcast and the air was quite still, so the machine hardly moved about at all, but for the last half-hour before reaching Hannover, there were plenty of sun-bumps off the rivers and woods and other changes of surface, even at altitudes between 2,000 and 3,000 feet. The D.H.50 took the bumps with a nice easy motion very like that of a well-sprung sporting car on a wavy road—the kind of motor-busted asphalt road which our obstinately ignorant road surveyors inflict on us at vast public expense when we might have smooth concrete roads such as exist in the United States.

But though the D.H.50 is a delightful flying machine the cabin of that particular example had not been designed to accommodate two full-sized passengers side by side. However, one's seat-fellow was a most affable and accommodating German who arranged his shoulders agreeably *en échelon* with one's own, and at intervals when we became cramped in one position changed over amiably, on the principle of "When father says turn we all turn." Also the passenger in front was equally agreeable in the matter of shifting his back from time to time to give change of knee room.

On the whole, in spite of the restricted space, the D.H.50 was very much the most pleasant of the four machines in which one travelled, thanks to her flying qualities assisted by the excellent piloting of Mr. Jones.

Improvements.

One gathers that in the later D.H.50s there is six inches more width in the cabin and about six inches more length. Without making the cabin what one could call roomy, that slight increase in size should certainly make it more fit for human habitation. Apparently the ministrations of the Aeronautical Inspection Department extend only to the airworthiness of the aeroplane and not to its habitability. Possibly in due time the Air Ministry will add to its officials some kind of sanitary inspector, analagous to those officials who approve or disapprove of the passenger accommodation on board ships. Then the unfortunate designers will have still more trouble.

Another objection to the habitacle, as the French call it, of the D.H.50 is the fact that the luggage has to be stacked in the seat which is intended for a fourth passenger. Consequently a third passenger in the front seat is apt to have his view obscured on one side by the luggage, apart from which one imagines that on a very bumpy day he might find himself occasionally underneath a small avalanche of packages.

It struck one at the time that quite conceivably the speed of a D.H.50 might not be reduced much, and might even be improved, by making the body somewhat pot-bellied, after the style of the German Focke-Wulff, and using the protuberant part as a luggage compartment. Possibly it might be worth the while of the De Havilland Company to fit a D.H.50 with a mock-up corporation just to see what effect it has on it in the air.

One remembers that during the War Mr. G. H. Handasyde tried a number of interesting experiments on these lines. As a result he produced during the War 1914-18 body shapes which account for the old Martinsyde machines being even to-day a good deal faster than most of our modern Service machines.

The Next Step.

We arrived at Hannover without incident, and after the usual friendly greetings from the Aero-Lloyd and passport officials whom one had met on the outward journey, and after quite a short stop for refreshment and to exchange one of our passengers who was stopping at Hannover for another one who was coming on to London, we started for Amsterdam.

Our new stable companion was rather bigger than the one we had dropped, so we persuaded him into the front seat with the luggage and one shared the back seat with the smaller German who had been in the front seat. The result was a considerable improvement.

From Hannover to Amsterdam we were flying in brilliant sunlight and over the hills approaching the Dutch Frontier there was considerable aerial activity which somewhat perturbed the front-seat passenger internally. But the other occupant of the back seat slept peacefully most of the time.

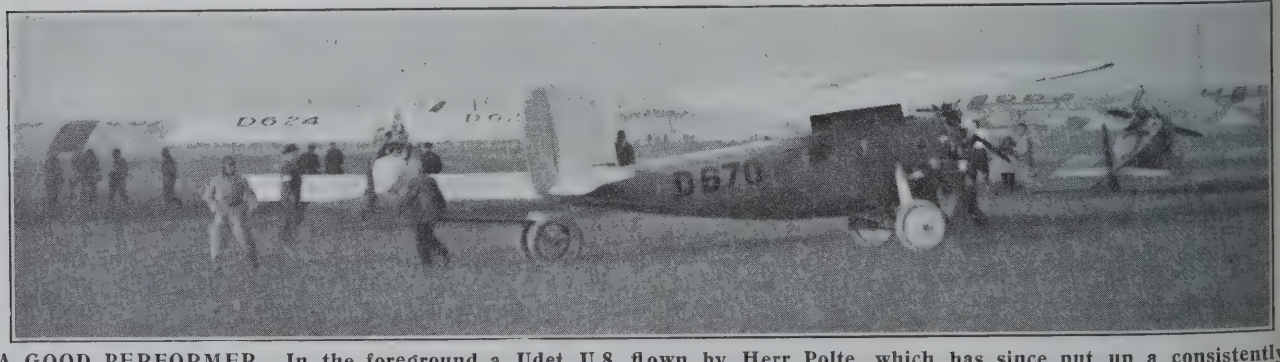
When we began to descend at the Schiphol Aerodrome at Amsterdam Mr. Jones tried switching over from one magento to the other. Apparently this displeased the engine, which proceeded to pop in a way which to the pilot suggested more magneto trouble. On the way from Hannover he had reported his previous magneto trouble by wireless so when we arrived at Amsterdam we found that Mr. Barnard had arranged for the two of us who were going on to London to transfer to one of the brand new three-engined Handley Pages which was taking the regular afternoon service from Amsterdam to London.

Personally one was glad of the change partly because one wanted to have the experience of flying in a three-engined machine, partly because one likes to have as many engines as possible when crossing the Channel, and partly because one had developed a positive dislike of the notion of crossing the Channel on a single-engined machine whose magnetos were distinctly below suspicion.

One was very glad to find that the pilot of the three-engined Handley Page was Mr. Wilcockson, who had done all the testing of this type besides having flown pretty well every known type of multiple-engined aeroplane.

The Three Engined H.P.

This machine, as most people probably know, has a 365 h.p. Rolls-Royce Eagle in the nose of the body and a Siddeley Puma of 240 h.p. on each wing. Therefore it has altogether about 840 h.p. There are seats for twelve passengers inside,

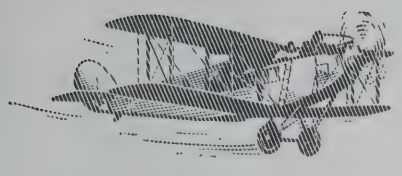


A GOOD PERFORMER.—In the foreground a Udet U.8, flown by Herr Polte, which has since put up a consistently good performance, having made fastest time on the second and third circuits and second fastest on the first and fourth circuits.

DO NOT FORGET THE R.A.F. DISPLAY AT HENDON ON JUNE 27.

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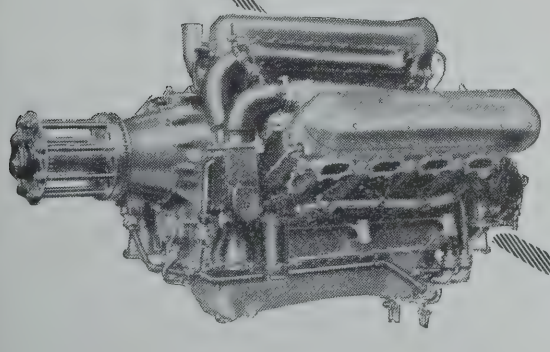




ON 30th April, 1925, a standard commercial Fokker aeroplane, fitted with one 450 h.p. Napier aero engine, carrying a useful load of one ton and piloted by Engineer Grasé, reached an altitude of 19,000 feet.

The World record for a machine carrying this load is 18,900 feet.

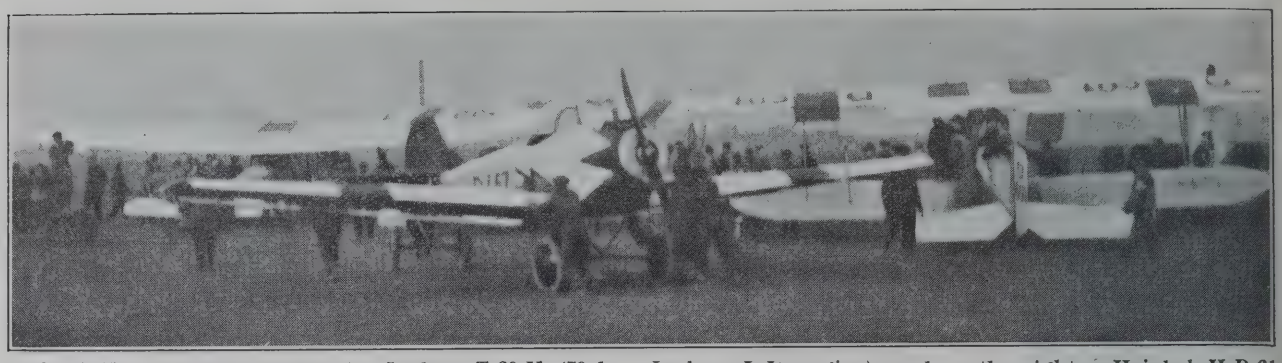
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A NOVELTY.—In the foreground a Junkers T.29.II (78 h.p. Junkers L.Ia engine), and on the right a Heinkel H.D.21. The peculiar ailerons of the Junkers can be seen in this picture.

and of these eleven were occupied. What luggage the machine was carrying one does not know but with thirteen people on board for the 800 odd horse power there was evidently heaps of power to spare.

Naturally an aeroplane of such size takes an appreciable time to get moving from a standstill. But as soon as it began to move it gathered speed quite rapidly and leaped into the air in quite an agile manner. When once we were in the air and had settled down at about 2,000 feet to fly steadily one had a chance of sizing up the machine.

The noise of the three engines is simply appalling. One is fairly sure that an aeroplane with metal sides or three-ply sides to the cabin "drums" very much less than does one with fabric sides. One imagines that most of the noise comes from the actual chopping up of the stream of air delivered by the airscrews as it meets struts and wing edges and so forth, and not from the exhaust of the engine. Surely at this time in the Twentieth Century some of our high-class scientists ought to have carried out a reasonable number of experiments in streamline effects and ought to have some notion of how to direct slipstreams from airscrews so as to keep them moderately quiet.

Of course one would rather travel in a safe aeroplane which makes a noise than in a quiet aeroplane which is dangerous to fly. But there seems no good reason why one should not acquire both safe and silent aeroplanes if only practical intelligence instead of purely theoretical science were applied to the problem.

Changing over from the D.H.50 to the three-engined Handley Page was like changing from a speedy sports car, as beforesaid, to a heavy solid-tyred motor lorry with too many leaves in its springs, or one might almost say to a traction engine, when one takes the noise into consideration. The D.H.50 is not exactly silent but it makes very little more noise than does the editorial Talbot when its exhaust pipe has self-determined itself, as it does on occasion. But in the three-engined machine one could scarcely think, let alone speak or hear. Cotton wool in the ears has little or no effect. One would need an entirely insulated helmet to keep the drumming out of one's head.

Considered as an engineering structure the three-engined Handley Page is a splendid example of British design and workmanship. Every detail gives confidence in its reliability. But it seemed uncomfortably rigid. When sun-bumps hit it the machine did not respond to them in the least, one merely felt a bump.

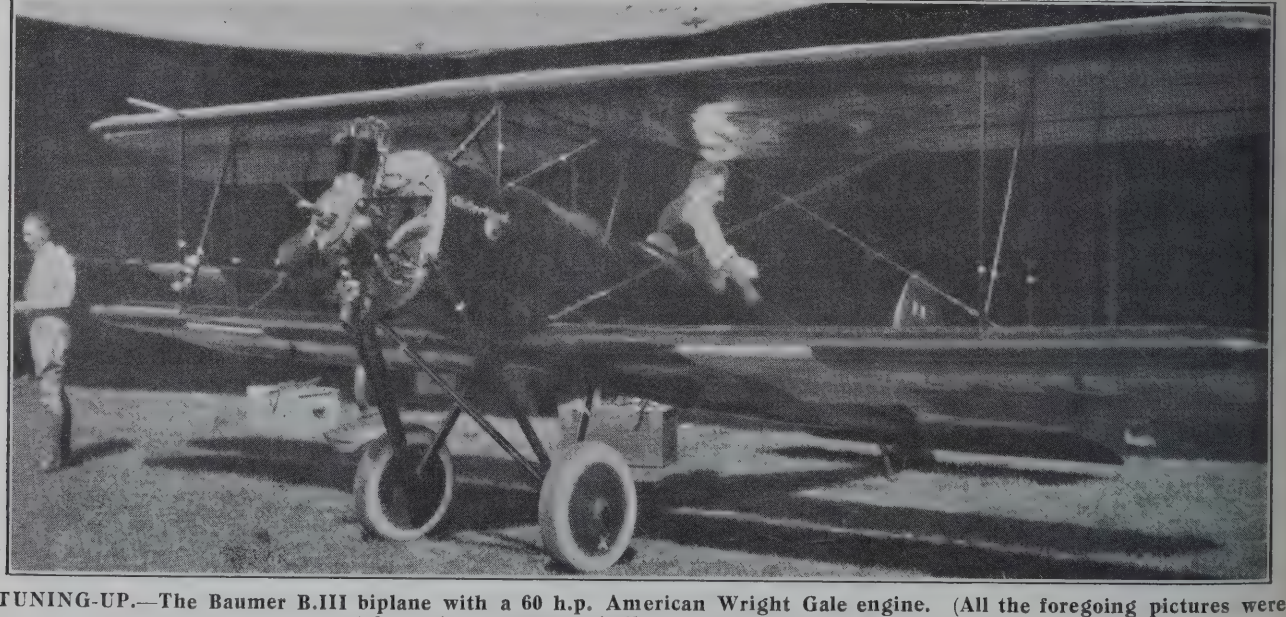
Unfortunately this rigidity did not apply to the seating accommodation. Instead of the luxurious lounge chairs of the Dornier Komet or the comfortably cushioned if considerably cramped benches of the D.H.50 one sat in an exceedingly exiguous cane chair with a very low and straight back and incredibly bandy legs, doubtless produced by endeavouring to support passengers of normal Dutch dimensions. But for the fact that one knows that Mr. Koolhoven does not travel by air one might have thought that one's own particular chair had been used by him. Fortunately the machine did not roll at all and only pitched once or twice, an indecent activity apparently produced by the pilot as a hint to a restless passenger who insisted on running up and down the cabin with a camera trying to take photographs of the Mole at Zeebrugge when the machine was directly over the top of it. If it had behaved actively one is sure the chair would have collapsed.

Unpleasant Symptoms.

After we had been going for about half-an-hour one noticed that the windows on the port side of the cabin had become misty with oil. One imagined that there must be some slight oil escape from the engine in the nose and that as the oil came out from the cowl it was being flicked backwards by the slipstream.

As we progressed further the windows became more obscured and every now and then there was a puff of smoke which penetrated to the cabin and made it smell rather like the paddock at Brooklands on a race day. The smoke was obviously caused by oil being sprayed onto the hot exhaust pipe of the Rolls-Royce which runs along just above the cabin windows. And sitting on the starboard side one noticed quite a considerable amount of vibration on various oil and water pipes on the starboard Puma engine, so one began to wonder whether the oil was coming from the port Puma, more especially as Mr. Willcockson had said before we left Amsterdam that some days previously on his way to Paris he had had to stop one of his wing engines because of a broken oil pipe and had done the last 50 or 60 miles to Paris on two engines.

According to Mr. Willcockson the machine would fly with

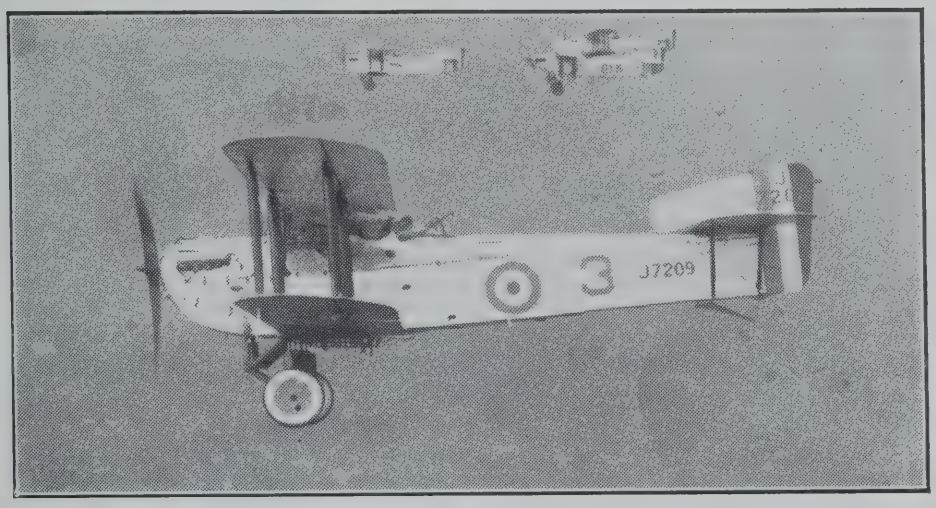


TUNING-UP.—The Baumer B.III biplane with a 60 h.p. American Wright Gale engine. (All the foregoing pictures were taken with a camera kindly lent by the Goerz firm.)

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EFFICIENCY.—The Focke-Wulff monoplane, Germany's (and perhaps the World's) most efficient commercial aeroplane which with a 100 h.p. Siemens engine carries a pilot and three passengers.

the Rolls-Royce and one Puma but would not fly on the two Pumas alone nor would it fly on the Rolls-Royce alone without a Puma to help. This statement casts no reflection on the engines because one could hardly expect such a vast mass of a machine to fly on a mere 480 h.p. or so. Apparently somewhere about 500 h.p. is expended in hauling the machine through the air and whatever happens to be left is available for useful load.

However we got along all right at something in the region of 85 to 90 m.p.h.—which is just about 20 m.p.h. too slow for practical air transport. Fortunately there did not happen to be any wind worth mentioning so we made quite reasonably good time over the ground.

The voyage was interesting because one could see almost all Holland at once. And when over Dunkirk one could see quite distinctly the ridge which includes the Mont des Cats over beyond Cassel on one side and both the Kentish coast and the Essex coasts at the mouth of the Thames on the other.

Crossing the Channel we headed straight into whatever wind there was and took a little over a quarter of an hour for the 20 miles. And everything seemed well, except that the oil on the cabin window increased.

More Trouble.

Then, somewhere about Ashford in Kent, the note of the engines changed and one noticed that the screw of the port Puma had become a windmill instead of a disc. Also above the battering of the engines one could hear that shrill scream which comes from a Puma intake pipe when the engine is running slowly.

Of course there was nothing whatever to indicate whether the engine had broken down or whether the pilot was deliberately throttling it because of overheating, or what was the matter. The only thing that everybody knew was that one of the engines had retired from business. However, we held on with the Rolls-Royce and the other Puma, flying very tail-down. This is certainly not comfortable in a big machine which moves slowly and may for all one knows stall and sideslip before anything can be done about it. Also not knowing what was the matter with the engine one had visions of the airscrew acting as a windmill and churning the engine round till it had chewed up its inside to such an extent as to heave bits of itself through the crankcase and split up the wings and wreck the whole machine.

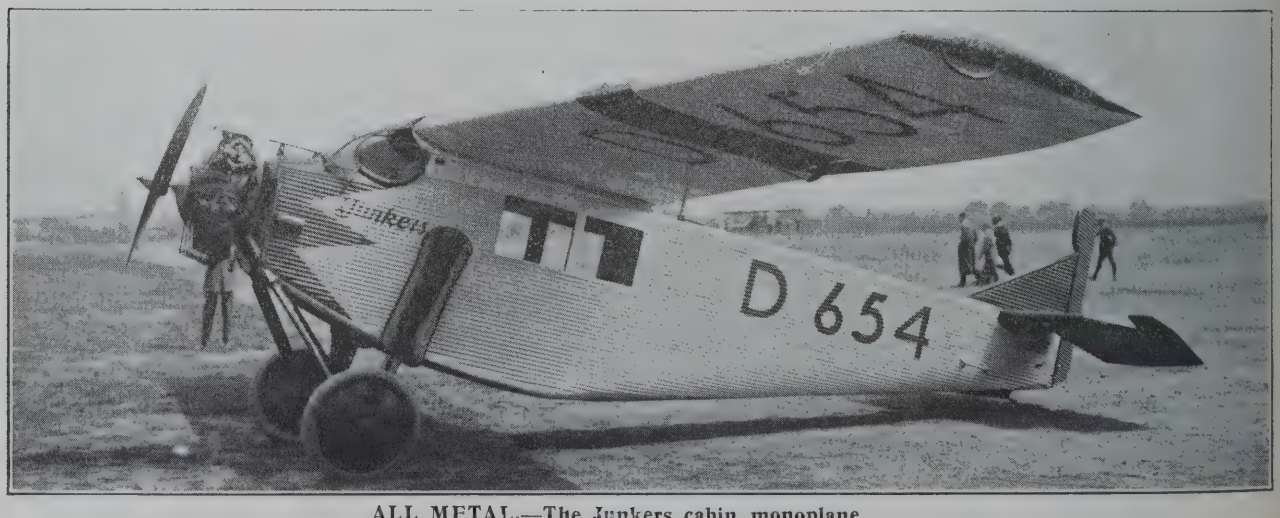
One has been told that a certain high official connected with Civil Aviation at the Air Ministry has suggested that, by way of proving to passengers the efficacy of multiple-engined machines, pilots of three-engined machines should make a habit of cutting off one of their engines over mid-Channel just to show the passengers that they can get to the other side with two engines. One can only say that this is one of the most utterly silly ideas that has ever emanated from an official, and that is saying quite a good deal.

Most people in these days know something about motor-cars and so they do know the difference between an engine which is running and an engine which is not running. Also they know that if there are three engines in an aeroplane all three are supposed to work. Consequently if one engine stopped working they would naturally assume that something had gone wrong with it. The result would be in all probability several cases of hysteria in mid-Channel and probably the assassination of several pilots on landing by infuriated passengers who had only then learned that their legs had been pulled.

The Multiple-Engine Question.

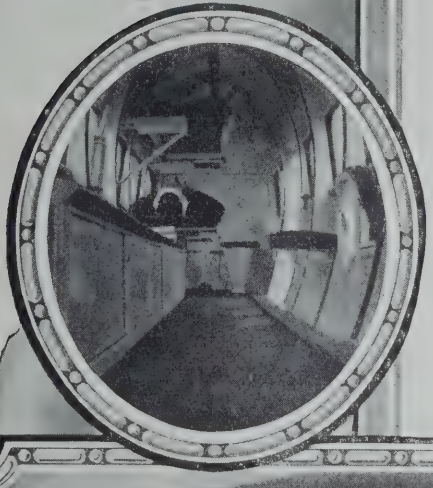
Personally after having had the experience of an engine stoppage on a multiple-engined machine one is by no means so fond of such a type of machine as one was in theory beforehand. If anything goes wrong with an engine in a single-engined machine the pilot is bound to land at the first available opportunity. But with a multiple-engined machine he may hang on with his remaining engines and wreck the machine because of the engine which has gone wrong.

Some people may remember that shortly after the end of the War, about 1919, when an attempt was made to fly a four-engined Handley Page from Newfoundland to New York something went wrong with one engine and as there was no landing place for some hundreds of miles over the forest Major Brackley the pilot kept on flying, with the result that bits flew out of the front engine and got themselves chewed up by the airscrew of the rear engine and hewed pieces out of the wings and generally made such a mess of the machine that it was only the Grace of God which got them safely onto solid ground again.



ALL METAL.—The Junkers cabin monoplane.

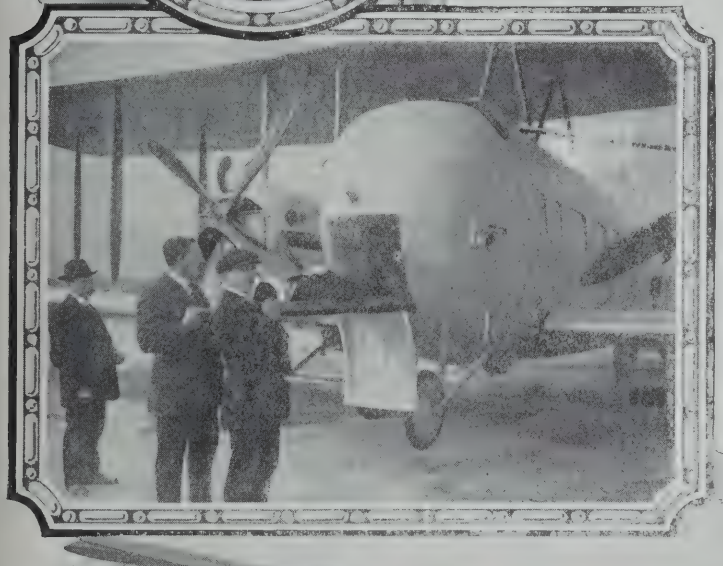
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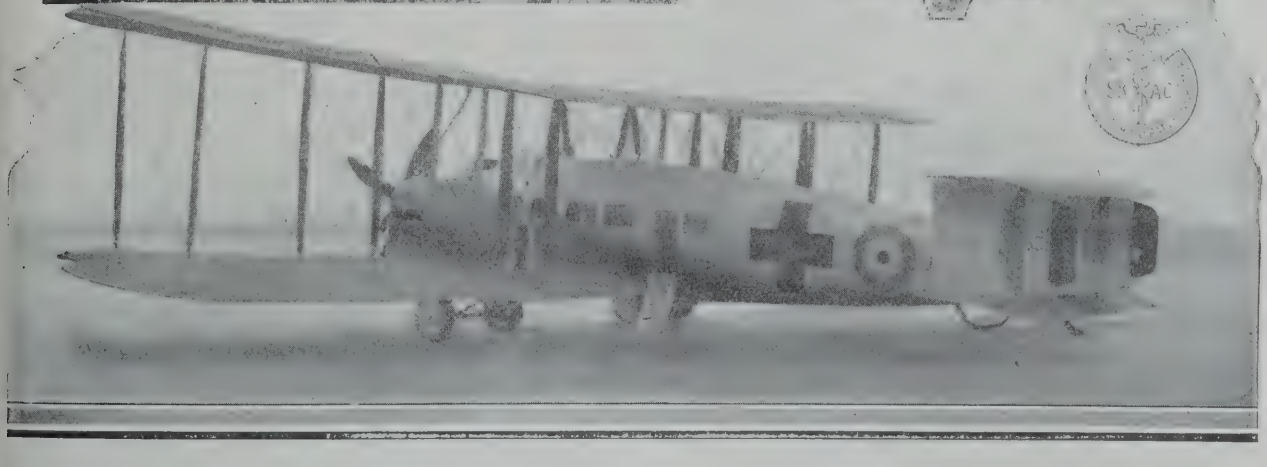
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RELIABILITY?—The Dietrich monoplane flown by Dr. Ing. Lachmann. In the cockpit is a warning from the German air authorities that the machine must not be stunted—the reason being that the wings are liable to flutter at high speeds. Flapped wings of this sort are not recommended in conjunction with Lachmann-cum-Handley Page slots.

On the other hand where there are big stretches of water to be crossed there certainly is reason for having several engines. But one is strongly of the opinion that pilots should receive orders that if there is anything seriously wrong with one of the engines they must land at the next aerodrome, and that if there is nothing seriously wrong and the pilot knows it the mechanic should come into the cabin and tell the passengers what is the matter in order to soothe their nerves.

As one remarked in the first of these articles, one is personally what Kipling calls "a fearful man," but one doubts whether one is in fact very much more of a coward than the average person. At present, at any rate, more people fly because of sheer bravado, just to say that they have done it, than because they like flying or because they really believe in air transport. And in order to make air transport a commercial proposition everything possible has got to be done to inspire confidence in those people who are foolish enough to fly at this stage of the proceedings.

Ultimately we got to Croydon and Mr. Wilcockson made a perfectly good landing. The three-engined Handley Page certainly does land slowly. The fact that it flies slowly does not necessarily entail a slow landing for there are some machines which actually land faster than they fly. The H.P. is at any rate consistent.

After we had landed it turned out that an oil pipe had dislocated itself, or had done something foolish, in the port Puma and that nothing had actually gone wrong with the engine itself. Therefore at any rate one's faith in the good old Puma engine remains unimpaired.

But one must confess that one's faith in air transport as such has not been increased by one's experiences. One used four machines to go to Berlin and back and four times one had engine trouble. There was one case of water-pump trouble, there were two cases of magneto trouble and one of a defective oil pipe.

Admittedly the journey each way was quite reasonably comfortable, and the fresh air at 2,000 is preferable to the atmosphere of a railway carrige or a boat. But knowing what can be done in the way of making machines which can land slowly and are practically uncapsizable and cannot nose-dive except on purpose, and knowing what we ought to be able to do at this date in the way of carrying a reasonable amount of load per horse power one is not at all favourably impressed by the present state of Civil Aviation.

It is a curious and lamentable fact that both our Service and civil aeroplanes to-day, for some reason or other, are much less efficient, taking them all round, than were the D.H.4s, Bristol Fighters, and some other machines which were produced in 1916-17. Whether it is the interference of the aerodynamic experts or whether it is that the designers are now depending too much on science and not enough on common sense one does not pretend to know, but the fact remains that except for one or two of the very latest secret machines, which have been produced for the R.A.F., in defiance of the experts, aeroplane performance figures, taking them all round, in this and other countries, have distinctly not progressed in the past seven or eight years.—C. G. G.

THE AIR WAR IN MOROCCO.

A *Reuter* message from Rabat dated June 10 states that M. Painlevé, the French Prime Minister, and M. Laurent Eynac, Air Minister, arrived at Rabat by air on that date.

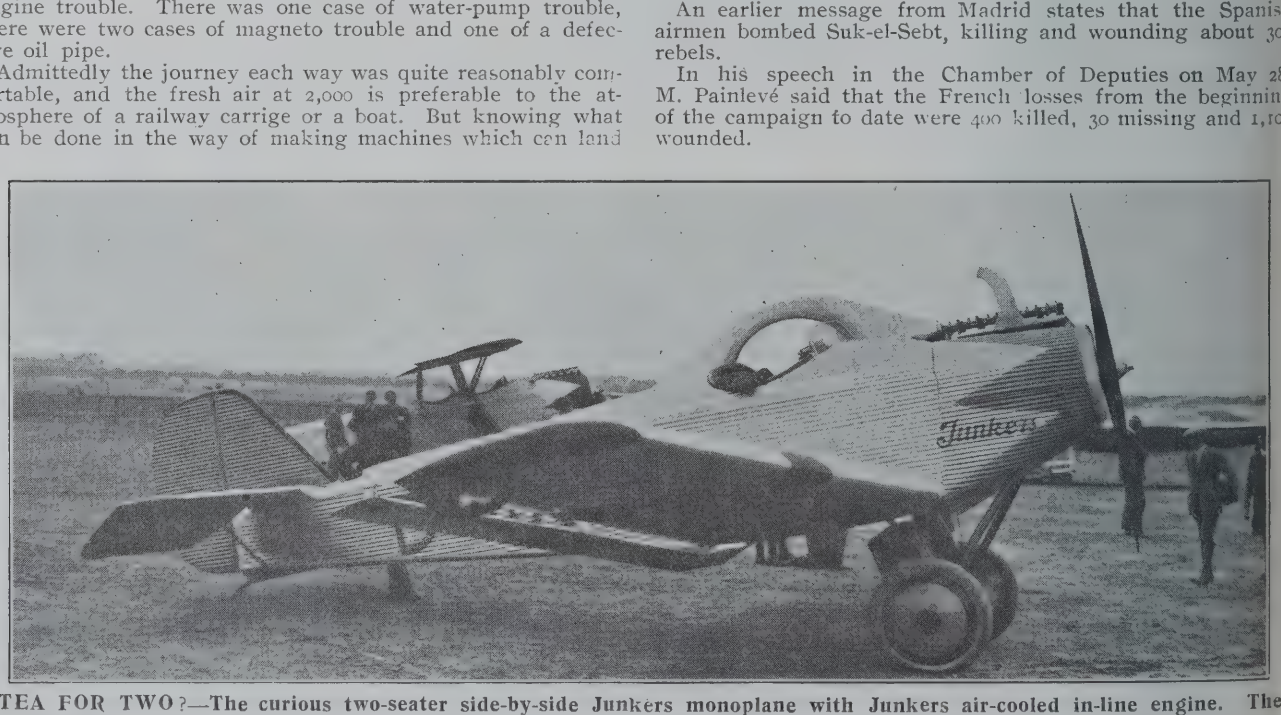
The party left Toulouse on two Latêcoère machines at 5.40 a.m. and reached Barcelona at 7.25 and Alicante at 10. They reached their destination twelve hours after their departure.

The object of the journey was to discuss the Moroccan situation with Marshal Lyautey.

A communication from *The Morning Post* correspondent at Tangier dated June 7 states that the Spanish Air Force has bombed the Alhucemas district causing great damage to the Riff trenches.

An earlier message from Madrid states that the Spanish airmen bombed Suk-el-Sebt, killing and wounding about 300 rebels.

In his speech in the Chamber of Deputies on May 28, M. Painlevé said that the French losses from the beginning of the campaign to date were 400 killed, 30 missing and 1,100 wounded.



TEA FOR TWO?—The curious two-seater side-by-side Junkers monoplane with Junkers air-cooled in-line engine. The tea-pot handle on top combines the duties of petrol-tank, head-guard (in case of a somersault) and fuselage longeron. The strange aileron arrangement should also be noticed.



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At the Royal Air Force Display, Hendon, June 27th, at least 27 de Havilland Aeroplanes will be engaged.

THE KING'S CUP RACE.

The race for the cup graciously presented annually by His Majesty the King, which will start and finish at Croydon on July 3 and 4, has drawn a very much better entry than was at first expected. Fifteen machines in all have actually been entered and every one of these is of post-War design, with the exception of an Avro 504 and a Martinsyde. Even these are fitted with post-War engines, and, as the Avro 504 may be expected to go on for ever with advantage to everybody concerned, this fact makes the race even more satisfactory. The Martinsyde is really a new machine as it has been radically altered and brought up-to-date by the A.D.C.

All the three pilots who have won the King's Cup previously are competing, and all the winning entrants, with the exception of Sir Samuel Instone who won the first cup, have again entered.

A curious fact about the race is that out of the fifteen entries only one engine, the Rolls-Royce Falcon, is water-cooled, and, moreover, this is the only engine in the race which is not of the post-War class.

The entries are as follows :—

1. D.H.37 (275 h.p. Rolls-Royce Falcon), entered by Mr. A. S. Butler. The pilot will be Major H. Hemming, M.C., who flew it the year before last. The machine has taken part in all the previous races for the King's Cup.

2. Avro 504 N (180 h.p. Armstrong-Siddeley Lynx), entered by Mr. A. V. Roe. It will be flown by Mr. Bert Hinkler, who has also entered for all previous races.

3. Bristol Bloodhound (400 h.p. Bristol Jupiter), entered by Sir G. Stanley White, Bart. It will be piloted by Mr. T. W. Campbell. This is the first public appearance of the Bristol Bloodhound and is Mr. Campbell's first King's Cup Race. It will be remembered that he flew one of the Bristol light aeroplanes at Lympne last year.

4. Armstrong-Whitworth Siskin V (385 h.p. Armstrong-Siddeley Jaguar), entered by Major F. M. Green. The pilot will be Mr. J. L. N. B. Baggs. The Siskin V is a smaller and faster conversion of the Siskin III which took part in last year's race. Major Green does a large amount of design work for Armstrong-Whitworth aircraft and was at one time at the Royal Aircraft Factory at Farnborough. Mr. Baggs is one of the R.A.F. Reserve instructors at Coventry.

5. Armstrong-Whitworth Siskin IV (385 h.p. Armstrong-Siddeley Jaguar), entered by Sir Glynn Hamilton West and flown by Flt. Lt. H. W. G. Jones, M.C. It will be remembered that Mr. Jones was the first man to finish in the Race last year.

6. Armstrong-Whitworth Ajax (385 h.p. Armstrong-Siddeley Jaguar), entered by Mr. J. D. Siddeley, C.B.E. It will be flown by Mr. Frank Courtney. Mr. Courtney won the race for Mr. Siddeley two years ago. The Ajax is a very fast two-seater reconnaissance biplane built more or less to the D.H.9a specification. It is understood that much of the design work for this machine has been undertaken by Mr. Courtney himself.

7. Avro Airdisco (120 h.p. Airdisco), entered by Lieut.-Col. J. Barrett Lennard. This will be flown by Mr. H. H. Perry. Mr. Perry has taken part in two previous races. It will be interesting to see how the Airdisco engine stands in the race.

8. Martinsyde A.D.C.1 (385 h.p. Armstrong-Siddeley Jaguar), entered by Lieut. Col. M. O. Darby. The pilot will be Sq. Ldr. Walter Longton, D.F.C., A.F.C. This should be an extremely formidable combination. The performance of the Jaguar-Martinsyde is well-known to readers of THE AEROPLANE. Sq. Ldr. Longton took part in one previous race for the King's Cup on a Sopwith Gnu.

9. D.H.60 Moth (27/60 Airdisco Cirrus), entered by Sir Charles Wakefield, Bart., and piloted by Mr. A. J. Cobham. Mr. Cobham won the race last year for Sir Charles Wakefield. This would seem a very ambitious race for such a machine as the Moth were it not for the fact that it is well within the capabilities of this machine as Mr. Cobham lately flew a thousand miles in the day on the Moth, which is all that is required for the King's Cup Race.

10. D.H.51a (120 h.p. Airdisco), entered by Mr. Stephen Donoghue, flown by Mr. C. D. Barnard. This perhaps is one of the most satisfactory entries of all. Mr. Donoghue is the World-famous jockey and this entry is no mere advertising stunt. Mr. Donoghue is one of the few well-known people who uses an aeroplane practically wherever he goes and this week he has joined the ranks of private owners having been presented with a D.H.50 by one of the horse-owners for whom he rides. He is really genuinely interested in aviation and his continual flying from place to place is one of the best advertisements for aviation there has yet been. He is known to be one of the cleanest riders in horse racing and his entry in the King's Cup Race has caused general satisfaction. He intends to fly in the machine himself as a passenger.

11. D.H.60 Moth (27/60 h.p. Airdisco Cirrus), entered and flown by Capt. G. de Havilland. Capt. Geoffrey de Havilland is the only owner-pilot-designer in the race, and with the exception of Mr. Fokker is the only regular designer-pilot (outside Germany) now flying. There are as usual several de Havilland machines in the race, there being five in all.

12. Armstrong-Whitworth Siskin V (385 h.p. Armstrong-Siddeley Jaguar), entered by the Rt. Hon. Sir Eric Geddes, G.C.B., G.B.E., and piloted by Capt. F. L. Barnard. It is interesting to see the Chairman of Imperial Airways taking an interest in aviation, though he evidently does not think it advisable to send one of his own firm's machines on such an exhaustive reliability trial. Mr. Barnard won the first King's Cup Race and has taken part in all three races.

13. A.N.E.C. (30 h.p. British Anzani), entered by Major J. C. Savage and flown by Mr. J. H. James. Major Jack Savage is the owner of all the sky-writing patents and entered a machine for the first King's Cup Race. He is extremely keen on all forms of sporting aviation and is to be congratulated on this very sporting entry. This is Mr. "Jimmy" James' first participation in the King's Cup Race. The machine is a light machine which was at Lympne last year and it will be interesting to see whether the engine can complete the 2,000-mile course.

14. Hawker Woodcock (400 h.p. Bristol Jupiter), entered by Mr. T. O. M. Sopwith and piloted by Mr. F. P. Raynham. This combination will carry with it the good wishes of all. It is the first appearance of the Hawker Woodcock in a race. Mr. Raynham has competed in two previous races and the first year he finished second.

15. D.H.51a (120 Airdisco), entered by Air Commodore J. G. Weir, C.M.G., and flown by Col. The Master of Sempill. Air Commodore Weir recently bought this machine for his own use. Col. The Master of Sempill competed in last year's race and finished last. Perhaps this year the last shall be first.

Lieut.-Col. Darby, of the Aircraft Disposal Co. Ltd., which firm being situate at Croydon may be regarded as the Home Team, asks one to state that the works of the A.D.C. at Croydon are open to all competitors for the days previous to and during the race for housing. Moreover the available men and plant will also be at competitors' disposal and the firm intends to do everything possible to help entrants.

The firm, who will shortly cease to be "Disposal" and will acquire the name of "A.D.C. Aircraft Ltd.," have recently bought some of the very latest and most up-to-date machinery for the construction of aircraft and engines. Both the Cirrus and the Airdisco are now in production.

The Accident to the Gloster II.

The Gloucestershire Aircraft Company Limited have issued the following statement concerning the recent accident to the Gloster II (Napier) Racing Biplane, in which their Test Pilot, Mr. L. L. Carter, was seriously injured on Thursday at Cranwell :—

The machine was built to the order of the Air Ministry and was undergoing Contractor's trials prior to being handed over. The pilot was about to carry out a speed test, and was forced to make an emergency landing at a speed of about 200 m.p.h., which carried away the whole undercarriage, the machine sliding on the fuselage for a distance of 150 yards. Fortunately it did not turn over. The propeller, which was vertical at the moment of impact, was bent under the fuselage and acted as a slide.

The machine had been flown successfully by Mr. Carter three times before the accident happened.

Mr. Carter has tested hundreds of Gloster machines, almost all of the High Speed type, during the past few years and it speaks well for both the pilot and the firm that this is the first serious accident which they have had. The accident to the Gloster II seaplane which sank at Felixstowe last year was due to float trouble.

The Gloucester firm were winners of the Aerial Derby in 1921, 1922 and 1923 and unopposed in 1924, and few British firms have done more to attempt to retrieve Britain's lost prestige in air records. The firm will continue their efforts in this direction, and will compete for the Schneider Cup Race in America this autumn with the Gloster III, a racing seaplane fitted with Napier engine which should not be confused with the unfortunate Gloster II landplane.

Everyone will be glad to know that Mr. Carter is progressing satisfactorily. Until proper investigations have been made it is inadvisable to guess at the cause of the accident.

The Moscow-Pekin Flight.

According to *The Times*, the "Dobrolet" Co., is organising a flight from Moscow to Peking via Mongolia, the object of the expedition, which will consist of six aeroplanes, being the investigation of the air route to the Far East and the "strengthening of the ties between the Soviet Union and the brotherly peoples of Mongolia and China."

The flight is due to leave Moscow on June 10, and will consist of the following machines :—Two R.Z. mail biplanes constructed at the O.D.V.F Works (former Dux factory) in Moscow, fitted with engines built at the "Bolshevik" works, one R.2 mail biplane with a Siddeley Puma engine, two Junkers monoplanes of the type used by the "Dobrolet" Co., and one A.K.1 monoplane.

The proposed route, which covers about 4,400 miles, will be via Nijni Novgorod, Kazan, Kurgan, Petropavlovsk, Omsk, Kainsk, Nijni Udinsk, Irkutsk, and Verkhne Udinsk to Urga, the capital of Mongolia, and across the Gobi desert to Peking.

No time limit is fixed for the expedition, and extensive propaganda for the increase of the Soviet Air Fleet will be conducted en route.

The Earl of Kinnoull.

On Tuesday of last week it was reported from Paris that the Earl and Countess of Kinnoull were injured in an accident at Le Bourgêt. They were taken to Lebajon Hospital, but were able to leave the next morning.

Lord Kinnoull, who learned to fly at the De Havilland Flying School, recently bought the Avro that Mr. Raynham owned and flew in the first Grosvenor Cup Race. The machine was taken over to Paris on Monday, June 8, by a Mr. Richards and therefore it seems probable that the accident occurred on that machine.


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THE ROYAL AIR FORCE.

The London Gazette.

June 5.

General Duties Branch.—Flg. Off. F. E. Vernon is granted a perm. comn. in the rank stated (June 3); J. A. Moore is granted a S.S. comn. as a Flg. Off., with effect from, and with seniority of, May 25. The following Plt. Offs. are confirmed in rank (May 7):—C. G. Crowden, W. E. Nicholls, C. H. Noble.

Flg. Off. J. P. Cafferkey is placed on half-pay, Scale B (June 1) Flt. Lt. C. S. Morice, M.C., is placed on the retired list at his own request, and is granted the rank of Sq. Ldr. (June 3); Flg. Off. F. C. Baker relinquishes his S.S. comn. on account of ill-health, and is permitted to retain his rank (Aug. 1, 1924). (Substituted for the notification in the *Gazette* of Aug. 5, 1924.)

Stores Branch.—The following are granted S.S. comns. as Plt. Offs. on probation, with effect from, and with seniority of, May 25:—A. Army, C. E. Burke.

Medical Branch.—R. F. G. Dickson is granted a S.S. comn. as Flg. Off., for three years on the active list, with effect from, and with seniority of, May 12; Flt. Lt. J. A. Quin, M.D., B.A., is transferred to the Reserve, Class D2 (May 31).

Reserve of Air Force Officers.—E. J. Dilnutt is granted a comn. as Plt. Off. on probation in the General Duties Branch, Class B (June 2). The following are confirmed in rank:—Flg. Offs.—F. E. Bridges (May 6); F. Horsley, M. V. Molony, H. L. Taylor, J. M. Walker, C. N. Wylam (June 2). Plt. Off.—W. Wilson (June 2). The commission of Plt. Off. on probation F. Middleton is terminated (May 16).

June 9.

General Duties Branch.—Flt. Cadet A. H. Willetts, having successfully passed through the R.A.F. Cadet College, Cranwell, is granted a perm. comn. as a Plt. Off. with effect from, and seniority of, May 16.

The following are granted perm. comns. in the ranks stated (June 10):—Flt. Lts.—D. L. Blackford, H. E. Searson, D.F.C., A. J. Warwick. Flg. Off.—F. W. Long.

Plt. Oc. B. D. J. Broadway is promoted to the rank of Flg. Off. (Feb. 15). The following Plt. Offs. on probation are confirmed in rank (May 12):—D. W. Trotter, A. H. Frost, G. B. Collett. Flg. Off. A. D. Page, M.M., is transferred to the Reserve, Class A (June 10); Obs. Off. J. Mitchell, D.S.O., D.F.C., is transferred to the Reserve, Class C (June 5).

Medical Branch.—P. D. Barling, M.B., is granted a S.S. comn. for three years on the active list as a Flg. Off., with effect from, and with seniority of, May 25.

Reserve of Air Force Officers.—The following are confirmed in rank:—Flg. Offs.—W. L. Coleridge (May 22); R. G. Hart, M.C., C. N. James, H. C. Kelly (June 9). Plt. Offs.—A. H. Partner (May 23); A. Gillespie, W. Mellor, A. Smith (June 9). Flg. Off. G. T. E. B. Dorman is transferred from Class A to Class C (June 4); Flg. Off. P. D. Robins, A.F.C., is transferred from Class A to Class C (June 9).

Appointments.

Week ending June 8.

General Duties Branch.—Flight Lieutenants C. H. Goring, D.S.O., M.C., to R.A.F. Depot on transfer to Home Estab., 10/4. P. W. S. Bulman, M.C., A.F.C., to No. 111 Sqdn., Duxford, 2/6.

Flying Officers A. B. Cree, to R.A.F. Reception Depot, West Drayton, 4/6. R. G. Chapel and J. A. Moore, to No. 24 Sqdn., Kenley, 5/6. W. R. Heywood, to R.A.F. Depot on transfer to Home Estab., 21/5. B. R. C. Coope, to Aircraft Depot, India, 9/5.

Medical Branch.—Squadron Leaders A. E. Panter, B.A., to R.A.F. Depot, 25/6. R. S. Overton, to R.A.F. Hospital, Cranwell, 9/6. A. J. O. Wigmore, M.B., to No. 6 Group H.Q., Kenley, 23/6. R. J. Aherne, M.C., to Central Medical Board, Hampstead, 15/6. P. H. Young, M.B., to H.Q., Halton, 14/6.

Flight Lieutenant W. G. L. Wambeek, to No. 3 Group H.Q., Spittlegate, 18/6.

Flying Officers H. W. D. Mackenzie, M.B., to No. 5 F.T.S., Sealand, 5/5. G. J. Hanly, M.B., to No. 7 Sqdn., Bircham Newton, 28/5. R. F. G. Dickson, to R.A.F. Depot, 5/6. P. D. Barling, M.B., to Research Laboratory and M.O.s' S. of I., Hampstead, on appointment to a S.S. Comn., for short course, 25/5.

Stores Branch.—Flying Officer J. Mahoney, to R.A.F. Depot on transfer to Home Estab., 13/5.

The following appointments were announced by the Admiralty on June 8:—

Lieuts. (Flg. Offs., R.A.F.).—R. R. Graham and F. W. H. Clarke, to *Furious*, and for flying duties with 461 and 462 Flights respectively (June 13).

These officers completed a course at No. 1 F.T.S., Netheravon, on Nov. 9, 1924, and since that date have been attached to the R.A.F. Base, Gosport.

Week ending June 15.

General Duties Branch.—Wing Commander A. A. Walser, M.C., D.F.C., to No. 1 Wing H.Q., India, to command, 1/10.

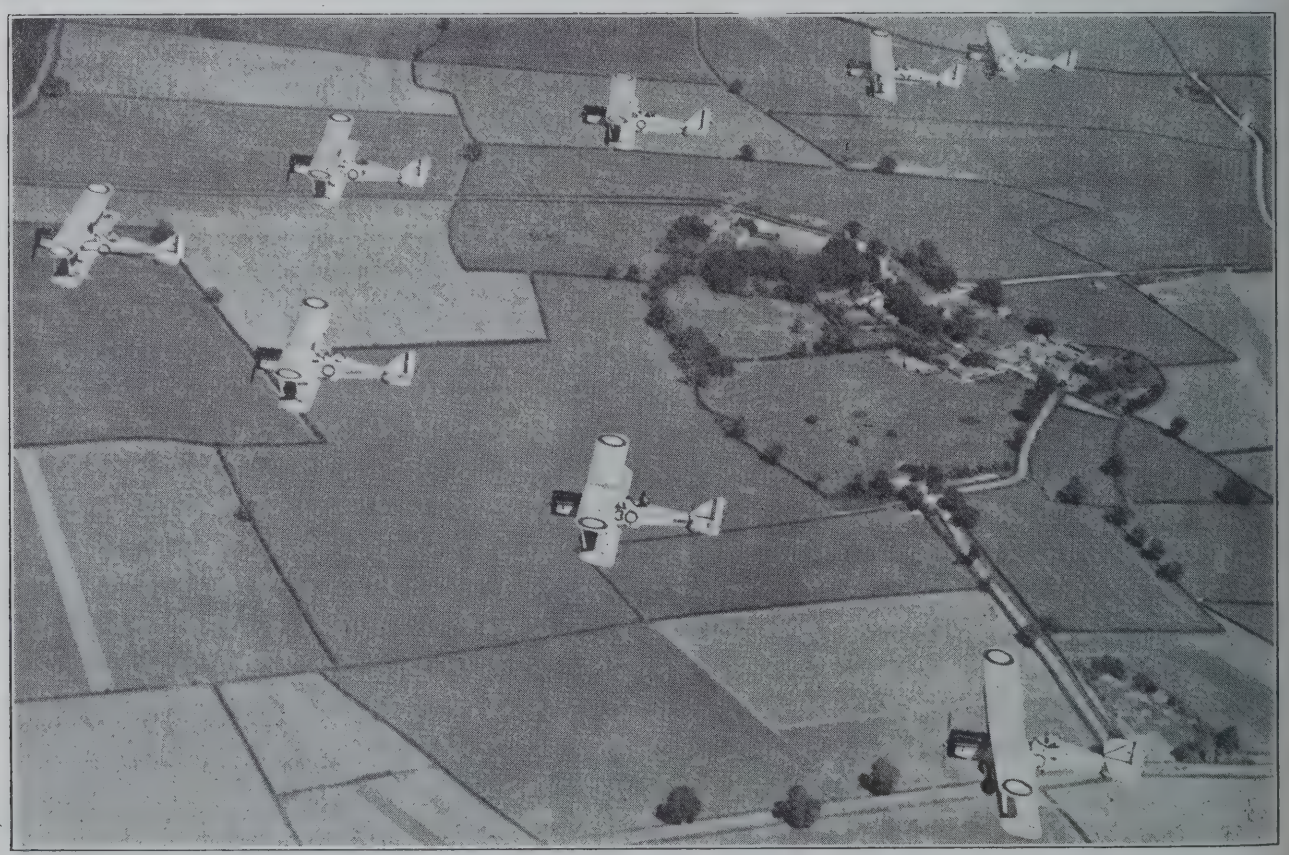
Flight Lieutenants H. L. Nunn, D.S.C., D.F.C., and S. C. Harker, to Storage Unit, Tangmere, 1/6. W. J. Daddo-Langlois, to School of Naval Co-operation, Lee-on-Solent, 23/6.

Flying Officers R. H. Horniman, to No. 32 Sqdn., Kenley, 8/6. Sir R. A. St. J. Leeds, Bart., to R.A.F. Depot, 25/5. M. C. W. C. Flint, M.C., to Aircraft Depot, India, 7/5. C. J. Pooley, to No. 60 Sqdn., India, 6/5. W. A. Opie, to No. 31 Sqdn., India, 10/5. A. R. Wardle, to R.A.F. Base, Calshot, 8/6. C. C. Bazell, to No. 1 S.D., Kidbrooke, 11/6. J. A. Elliott, to No. 17 Sqdn., Hawkinge, 12/6. D. M. Rees, M.B.E., to Storage Unit, Tangmere, 1/6. S. A. Lane, to No. 84 Sqdn., Iraq, 20/5.

Pilot Officers W. Wynter-Morgan, to No. 60 Sqdn., India, 2/5. N. S. Little, to R.A.F. Depot on transfer to Home Estab., 21/5. A. H. Willetts, to No. 24 Sqdn., Kenley, on appointment to a perm. comn., 16/5.

Medical Branch.—Wing Commander T. S. Rippon, O.B.E., to H.Q., Special Reserve and Auxiliary Air Force, 23/5.

Stores Branch.—Flight Lieutenants P. J. Murphy and P. F. Con-

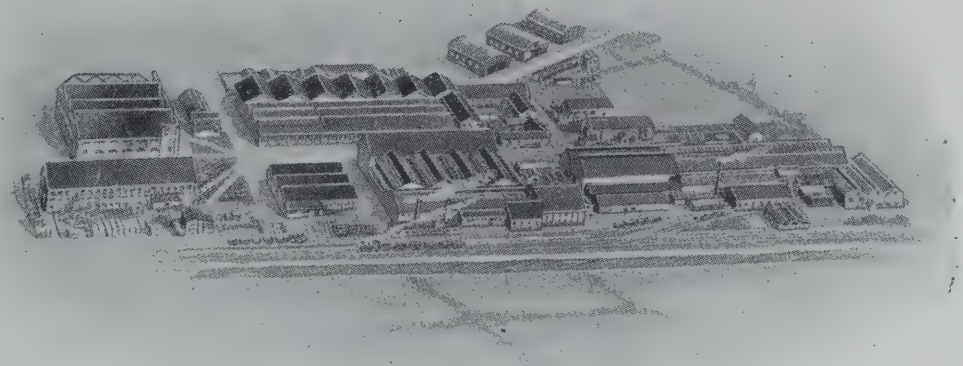


NOW THE DAY (OF THE D.H.9a) IS OVER.—This photograph shows No. 39 Squadron practising formation flying for the Display. Now that the O/400s have disappeared from the air lines and the notorious Croydon "White Elephants" no longer parade on Feast Days let us hope that the 9as, so e xcellent in 1917, will now retire.

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naughton, to R.A.F. Depot, 8/6. D. W. Wilson, to Stores Depot, Middle East, 19/5. Flying Officers J. C. Shakeshaft, to R.A.F. Depot, 30/5. W. Liniker, to Aircraft Depot, Middle East, 29/5. E. F. Elliott and G. W. Longstaffe, to R.A.F. Depot, 8/6. J. E. Truss, M.C., to Storage Unit, Tangmere, 1/6.

The Birthday Honours.

The following names of officers and men of the Royal Air Force appear in the King's Birthday Honours List for 1925 :—

ORDER OF THE BATH.

C.B. (Military).—Group Captain John Adrian Chamier, C.M.G., D.S.O., O.B.E., R.A.F.

ORDER OF BRITISH EMPIRE.

K.B.E. (Military).—Air Vice-Marshal John Frederick Andrews Higgins, C.B., D.S.O., A.F.C., R.A.F.

C.B.E. (Military).—Wing Cmdr. Augustine ap Ellis, R.A.F.

O.B.E. (Military).—Sq. Ldr. Norman Channing Spratt, R.A.F. Flt. Lt. Albert William Fletcher, D.F.C., A.F.C., R.A.F. Flt. Lt. Norman Hugh Jenkins, D.F.C., D.S.M., R.A.F.

M.B.E. (Military).—Flg. Off. Ernest Stanford Bulleu, R.A.F. Flg. Off. Edwin James Newman, R.A.F. No. 27341 Sjt.-Maj., 1st Class, Albert Edward Harbot, R.A.F. No. 224451 Sjt.-Maj., 2nd Class, Reuben Charles Pennicott, R.A.F.

AWARDS.

Air Force Cross.—Flt. Lt. Richard Burnard Munday, D.S.C. Flt. Lt. William Edmund Somervell.

Air Force Medal.—Sjt. (Pilot) Alfred Percy Reeve.

ORDER OF THE BRITISH EMPIRE.

Civil Division.

C.B.E.—Col. Ivor Curtis, M.A., A.M.I.M.E., Educational Adviser, Air Ministry.

O.B.E.—I. B. Hart, Esq., B.Sc., Ph.D., Education Officer, Grade I, Air Ministry.

J. B. Newman, Esq., Education Officer, Grade II, Air Ministry.

G. R. Richardson, Esq., Statistical Officer, Air Ministry.

H. Shires, Esq., Civil Engineer, Works and Buildings Dept., Air Ministry.

The R.A.F. Display.

The following notes have been issued by the Air Ministry :—

The sixth Royal Air Force Display (formerly called the Aerial Pageant) will be attended at Hendon on Saturday, June 27, by the King and Queen, by the Duke and Duchess of York and by a notable company of visitors including several members of the Cabinet, and also ex-Ministers.

The progress of war flying will be well illustrated by Wing evolutions by four day-bombing squadrons which are used in connection with Home Defence for counter offensive operations on enemy territories, and by Flight evolutions by single-seater fighters which are retained at home for defensive purposes against enemy bombing raiders. Together the four day-bombing squadrons will number 36 machines, the types used being Fairey Fawns and De Havilland 9as.

An event which will have a popular appeal will be squadron drill carried out by wireless telephony, all the orders being given by the Squadron Leader from his machine in the air with the exception of one order which will probably be given by the King from the Ground Station. The use of wireless telephony for squadron operations is entirely new and has not been adopted in any other country. It enables the Squadron Leader not only to pass his instructions with certainty but it also assists the pilots. The call sign of No. 25 Fighter Squadron, which will carry out this event, is "Cuckoo," while the Ground Wireless Station with which it may at times require to communicate is "Alligator."

Over one hundred aircraft, almost entirely drawn from Home Defence Units, will take part in the Display.

An Amend.

In last week's issue of The Aeroplane, in the account of the R.A.F. Display Rehearsal, one congratulated Sq. Ldr. Maxwell on the excellent handling of the Grebe in combat with a Bristol Fighter. One has since learned that the said Grebe was flown by Flt. Lt. F. J. Vincent and so the bouquets for this particular performance must be transferred to him. For the error one must blame the programme with which one was supplied.

As a matter of fact one watched the performance from Whytleafe Station, as one had to leave before the end of the display, and seeing a Grebe doing some extremely pretty flying one naturally, in view of the programme statement, concluded that it was Sqd. Ldr. Maxwell.—G. D.

The Crew of the R.33.

On June 4 the Air Minister presented the members of the crew of the R.33 with gold watches as a token of the Air Ministry's appreciation of their gallant conduct when the airship broke from her mooring at Pulham Aerodrome.

After presenting the watches and personally congratulating each man, Sir Samuel Hoare said that by their devotion to duty the crew of the R.33 had prevented alarmists from stopping airship development. The crew represented the three classes upon which British flying must be based. Flt. Lt. Booth was a worthy representative of the 3,000 officers of the R.A.F. Flt. Sjt. Hunt was a no less worthy representative of the Air Force N.C.O.s and men without whose work the brilliance and bravery of pilots would be of little account.

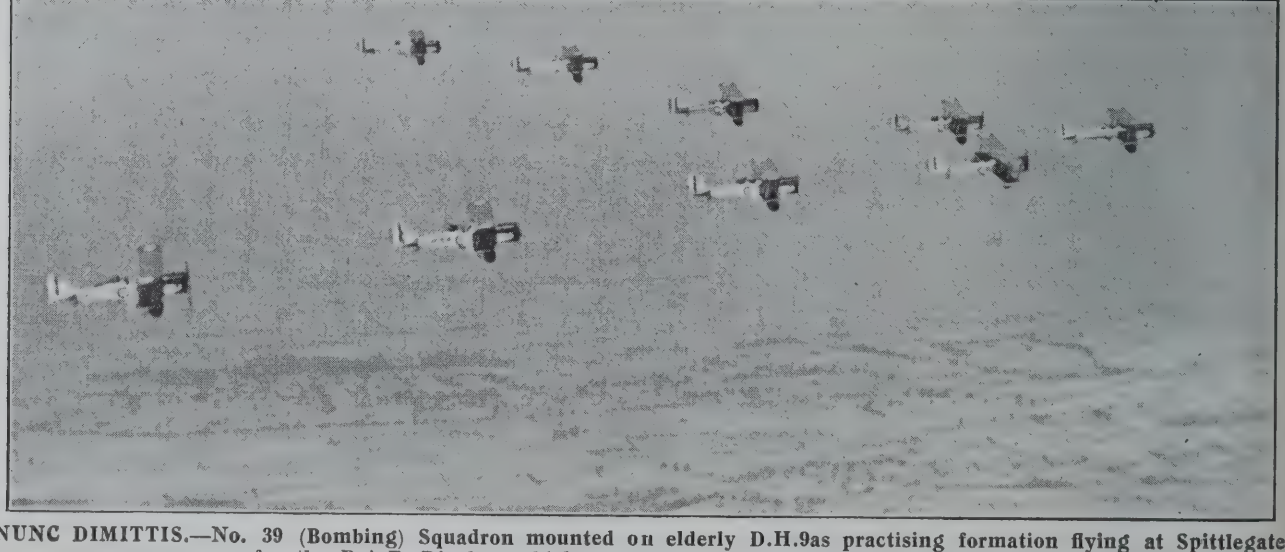
The civilian members of the crew, with Mr. George Ernest Long, the second coxswain, at their head, represented the great and growing body of civilians who were engaged upon aviation work or were interested in flying and to whom the country looked for its home defence and auxiliary squadrons, as well as in its workshops and ordinary life, to foster the air sense of the British nation.

If the crew of the R.33 had failed to navigate the ship during the terrible 33 hours of the flight, airship development would have been stopped for a generation. Owing to the skill and bravery of Flt. Lt. Booth and his crew what might have been a great calamity had turned out a benefit to airship development generally.

The Territorial Air Force.

The following changes in the titles of Territorial Association are notified :—

The County of London, City of London, City of Edinburgh, and City of Glasgow Territorial Army Associations will in future be known respectively as :—The Territorial Army and Air Force Association of the County of the City of London, the Territorial Army and Air Force Association of the County of the City of Edinburgh, and the Territorial Army and Air Force Association of the County of the City of Glasgow. These changes of designation are due to the fact that R.A.F. units are now included in the Forces administered by the Associations named.



NUNC DIMITTIS.—No. 39 (Bombing) Squadron mounted on elderly D.H.9as practising formation flying at Spittlegate for the R.A.F. Display, which takes place at Hendon on Saturday week.

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The Fleet Air Arm.

The following is taken from *The Times* of June 3 :—

The aircraft-carrier *Hermes*, Capt. the Hon. Arthur Stopford, C.M.G., will be recommissioned to-day at Portsmouth for further service in the Mediterranean. Among those joining the vessel for her new commission are Lt.-Cmdr. W. K. D. Dowding, D.S.C., who recently completed the course at the R.A.F. Staff College at Andover; and Lts. T. R. Beatty, from the Navigation School, A. D. Torlesse, late of the destroyer *Watchman*, and P. K. Enright, from the submarine depôt-ship *Vulcan*. In addition, a number of officers, including Lt. (E) E. A. A. Gibbon and Capt. G. E. Wildman-Lushington, R. M., are appointed to the *Hermes* for duty as pilots in No. 403 and No. 421 Flights. The former is composed of Flycatchers and the latter is a spotter reconnaissance flight composed of Fairey IIId. machines.

The Middle East Dinner.

Air Vice-Marshal Sir Geoffrey Salmond presided at the 4th annual Middle East Dinner, which was held in the Empire Rooms, Trocadero Restaurant, on May 28.

One hundred and thirty-four officers who served in the Middle East Brigade during the War were present, and these, with their guests, included the following :—

General Sir George Milne, who, as G.O.C., the Salonica Expeditionary Force, was the guest of the evening. Sir Henry White Smith. Air Commodores A. E. Borton, B. C. H. Drew. Group Captains C. S. Burnett. Lieut.-Colonels S. S. Nevill, C. Bovill, J. E. Dixon-Spain, H. Burchall. Wing Commanders H. Blackburn, Grant-Dalton, G. P. Grenfell, C. Fraser. Majors W. J. May, Berridge, Windham-Birch, Michie, McGrindle, R. W. Crossley, K. R. Binning. Squadron Leaders W. H. O'Neill, Fawdry, W. C. Clark, H. G. Jones, A. S. C. Maclaren, Keeble, Everidge, A. C. Wright, Pettingell, De Roeper, Drummond, Wells, Dolphin. Captains E. A. E. Wood, S. F. Baker, S. H. Bird, John Brown, P. L. and G. L. Hunting, Venning, Garrood, A. W. Hawkins, G. Somers-Clarke, A. R. Thompson, H. Clogstoun, West White, J. Watson, J. A. Bonnymann, H. Hamshaw, Thomas, N. S. Beswick, R. K. Morris, T. G. Macaulay, D. R. Mackie, Drew-Mercer, Stevenson-Peach, Colin Dunlop, Cookson, Carryer. Flight Lieutenants A. P. Ledger, T. O. Clogstoun, Wynne, Preston, B. C. Adamson, G. C. Anne, Hopps, G. C. Gardiner, Meynell, Junor, R. B. Sutherland, Woodhouse, Rice, Ritchie, Cullen, Trinder, W. L. Shaw, Halley, Emmett, Tancred, Moffatt, and W. L. Harvey. Messrs. W. N. Tolfree, Moseley, Weir, R. T. Carter, Steff, R. C. Williams, R. S. Martin, A. E. L. Skinner, W. F. Knight, W. Greenslade, G. R. Morgan, G. Mortimer, W. Courtenay, Iles, Desforges, C. Buckingham, Clogstoun, C. M. Vincent, B. de Nevers, C. W. Hill, W. Sutherland, C. E. V. Graham, S. Bull, C. Stelfox, A. W. Cullington, F. G. Saunders, R. L. Barbour, Wackett, F. May, Myson, A. T. Thompson, and H. L. Saunders.

During dinner the string orchestra from the R.A.F. Central Band played a programme of music.

Fencing at Olympia.

EPEE :—June 2 was the first day with the épée at Olympia, and the following Officers and Other Ranks of the R.A.F. qualified for the Championship Pool :—

Officers.—Flg. Off. F. C. Chalmers, Flt. Lt. H. C. Calvey.
Other Ranks.—Sjt. Faiers, Cpl. Mutton.

On the following day the Championships of the Individual Services were decided, the two leaders in each of the four pools qualifying for the final Inter-Services' Pool. Flt. Lt. Sherriff and Flg. Off. Chalmers winning the R.A.F. Pool.

In the Inter-Services Championship Pool, Flt. Lt. Sherriff beat Cpl. Richards in the sixth round, and Flg. Off. Chalmers beat Lt.-Cmdr. Kershaw. Flt. Ltd. Sherriff beat Lt.-Cmdr. Kershaw in the final round. The Championship was won by Q.M.S. Instructor James (Army), L/Cpl. Richards (Army) took the second place, and, after a tie with Lt.-Cmdr. Kershaw, the third place was won by Flt. Lt. Sherriff.

FOIL :—The following qualified for the R.A.F. pool for the foil championships at Olympia on June 21 :—

Officers.—Sq. Ldr. C. C. Darley, Flg. Off. F. C. Chalmers.
Other Ranks.—Cpl. Hancock, Sjt. Scott.

The Inter-Services Championship was won by Flt. Lt. Sherriff, who went through both the R.A.F. pool and the Inter-Services pool without losing a bout. He also gained the special award for style in the final pool, by the unanimous award of the judges.

CADETS' FENCING :—The fencing by the cadets of the Services took place on June 6. For the purposes of the Skill-at-Arms, Sub-Lieuts., R.N., apparently rank with Cadets of the Army and Air Force. The R.A.F. was not placed in the Foil pool, but Flt. Cadet Freebody was third in the Sabre pool and Flt. Cadet J. R. Jones won the Bayonet pool.

The following were the Air Force results in the Sabre Competitions on June 9 :—

Officers.—1, Flg. Off. F. T. Chalmers; 2, Flg. Off. D. J. Sherlock; 3, Flt. Lt. J. H. Bentham.

Other ranks.—1, Cpl. R. Hancock; 2, Cpl. C. A. Turner; 3, L-AC. E. W. Edwards.

The result of the Individual Air Force Sabre Championship was :—1, Flt. Lt. Sheriff; 2, Cpl. R. Hancock; 3, Flg. Off. Chalmers.

A BIRTHDAY HONOUR.

VISCOUNT.—Marcus, Baron Bearsted. For great public benefactions and political services.

[The following paragraph from *The Morning Post* of June 4 is of interest in connection with this honour :—

SHELL BOXES.—The sale of boxes covered with shells and inscribed "A Present from Margate," from Hastings, Brighton, or where not, laid the foundation of the fortunes of Lord Bearsted, who figures in the Birthday Honours list. His father was a pioneer of the wholesale shell business, and supplied from his London warehouse millions of the shell-encrusted boxes sold to seaside holiday-makers during the Victorian era. With the money these brought him Marcus Samuel *père* developed the business by importing curios from India, China, and Japan. Then the firm became agents for two Japanese shipping houses, and entered the realms of high finance by floating the first Japanese loan in London. Some years after his father's death Lord Bearsted gained permission (despite fierce opposition by the Standard Oil Company) to ship Russian petroleum through the Suez Canal, thus obtaining a practical monopoly of the Chinese and Japanese markets. The Shell Trading and Transport Company was then floated, the name being chosen in order to commemorate the wares which first brought prosperity to the Samuels.]

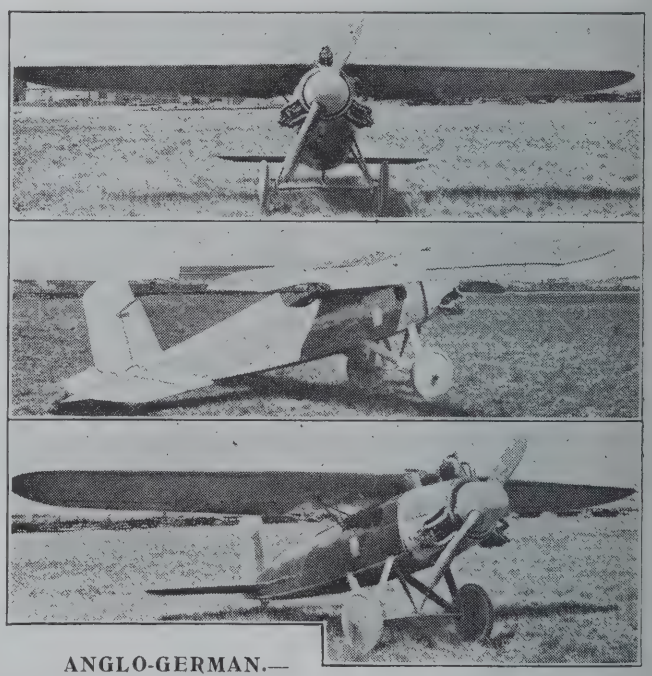
"THEY CATCH 'EM YOUNG."

The following paragraph is taken from the Naval and Military columns of *The Times* of May 26 :—

From June 1 all midshipmen at the United States Naval Academy are to receive instruction in practical and theoretical aviation, so that on graduation they may qualify as pilots or observers, according to their physical fitness. A memorandum announcing this addition to the course at the Academy states that the study of aeronautics is to constitute an integral part of the training. To this end, the Department of Engineering will become the Department of Engineering and Aeronautics, and that of Seamanship the Department of Seamanship and Flight Tactics.

All graduates, in addition to the courses of the regular curriculum in these Departments, are to receive three months' special intensive instruction in ground and flight work. The further instruction necessary to qualify each graduate as a naval observer or naval aviator is to be given during the first two years after graduation, which period is classed as the instructional period of junior officers. No official action in recent years, states the *Army and Navy Journal* of New York, has created a greater sensation than this adoption of an aviation course for midshipmen.

The action of the Secretary of the Navy will have a far-reaching effect on the entire aviation problem, adds the journal, and in some quarters it is believed that the War Department will be forced to adopt the same policy for West Point.



ANGLO-GERMAN.—
The small high-speed Albatros monoplane with 100 h.p. Bristol Lucifer engine.

MALLITE
IS THE
AERONAUTICAL PLYWOOD
OF THE WORLD.

STRONGER AND MORE DURABLE THAN METAL.
For AERO and SEAPLANES manufactured to the BRITISH AIR MINISTRY SPECIFICATION 2.V.3 by the
AERONAUTICAL & PANEL PLYWOOD CO., LTD.
218-226, Kingsland Road, London, E.2.
Phone : Clissold 3680/2. Grams : VICPLY, KINLAND, LONDON.

BRITISH ADC LIMITED AIRCRAFT

EXPERT OPINION.

Mr. Alan J. Cobham's opinion of the 27/60 h.p. "CIRRUS" engine is given in the letter reproduced below :—



Mr. Alan J. Cobham.

27, Buckland Crescent,
Hampstead, N.W.3.
TEL. HAMPSTEAD 8058.

1.6.25.

The Aircraft Disposal Company,
Kingsway, London. W.C.

Dear Sirs,

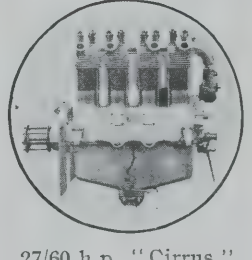
The all essential to a pilots comfort and ease of mind, is absolute confidence in his engine.

When I flew the de Havilland MOTH with its 27-60 H.P. CIRRUS engine to Switzerland and back, over 1000 miles in one day, I had complete confidence that the CIRRUS engine would not fail me in any way.

I believe that the only light aeroplane engine that is suitable for the private owner is one that is perpetually reliable, simple to maintain and will give continual long running without overhaul. From my experience I think the CIRRUS engine comes up to this standard.

Yours very faithfully,

Alan J. Cobham



27/60 h.p. "Cirrus."

The first and only British Low Power Aero Engine to complete the Air Ministry 100 hours type test.

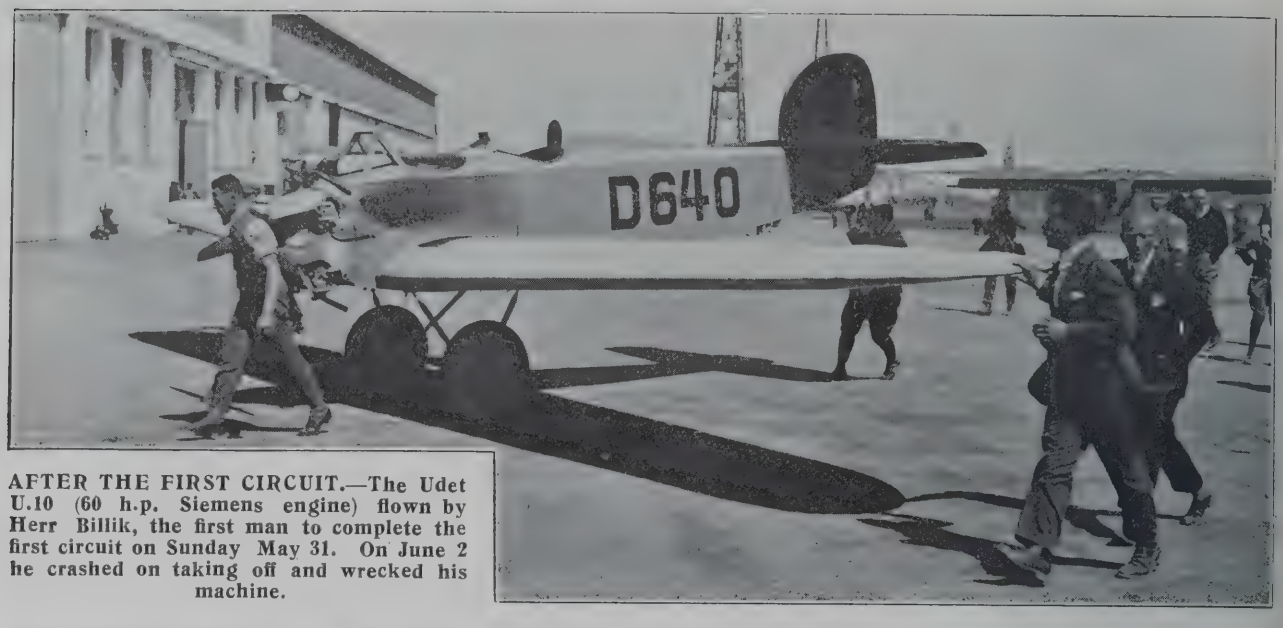
This Engine has been approved and adopted for supply in connection with the Air Ministry Light Aeroplane Club Scheme.

AIRCRAFT DISPOSAL COMPANY, LTD.,
REGENT HOUSE,
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Telephone : Regent 6240.

Cables : "Airdisco, London."

RUNDFLUG COMPETITORS.—I.



AFTER THE FIRST CIRCUIT.—The Udet U.10 (60 h.p. Siemens engine) flown by Herr Billik, the first man to complete the first circuit on Sunday May 31. On June 2 he crashed on taking off and wrecked his machine.



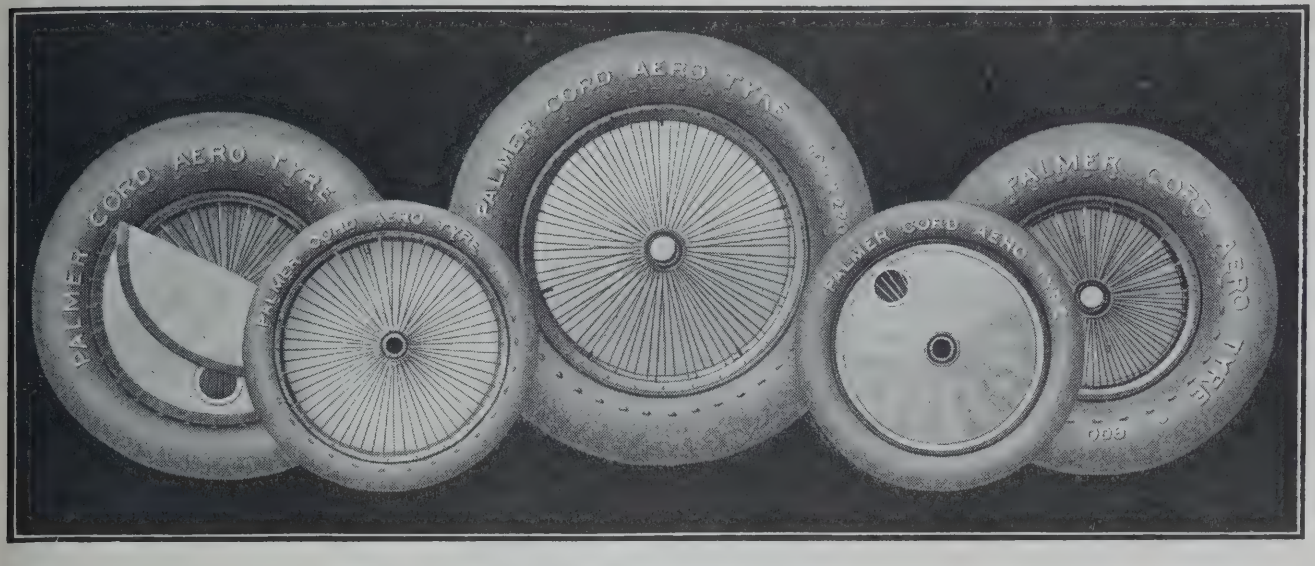
The Daimler L.21 (two Mercedes engines, 19 h.p. each) which has a commanding distance lead in Class A and will presumably carry off first prize.



Herr Ungewitter and his Albatros L.69 (100 h.p. Siemens-Halske engine) who made fastest time in the first lap, but afterwards crashed.

PALMER

LANDING WHEELS & TYRES



STANDARD SIZES.

Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Size	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m/m	m/m			m/m	m/m	m/m			m/m	m/m	m/m
375×55	168	111.12	25.4	Central	700×100	99	178.	38.89	132/46	1000×150	201	185.	60.32	125/60
300×60	16	111.12	25.4	Central	,,	112	150.	38.09	Central	,,	210	185.	60.32	Central
,,	17	72.39	12.7	Central	650×125	119	178.	55.	132/46	1000×180	148	220.	80.	Central
450×60	30	89.	31.75	Central	,,	147	178.	55.	Central	,,	149	185.	55.	Central
,,	138	130.	38.09	Central	750×125	77	178.	44.45	132/46	,,	155	220.	66.67	Central
575×60	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	166	185.	55.	125/60
,,	34	150.	31.75	104/46	,,	95	185.	55.	Central	900×200	107	185.	55.	Central
,,	111	150.	38.09	104/46	,,	96	178.	55.	132/46	,,	108	185.	55.	125/60
600×75	21	160.	28.	Central	,,	99	178.	38.89	132 46	,,	128	220.	66.67	Central
,,	34	150.	31.75	104/46	,,	112	150.	38.09	Central	,,	137	250.	80.	Central
,,	111	150.	38.09	104/46	800×150	82	185.	55.	135/50	,,	202	185.	60.32	Central
700×75	78	178.	44.45	132 46	,,	85	185.	55.	Central	1100×220	134	220.	66.67	Central
,,	79	178.	44.45	Central	,,	161*	185.	55.	135/50	,,	136	250.	80.	Central
,,	100	178.	38 09	132 46	,,	163*	185.	66.67	135/50	1250×250	133	250.	80.	Central
,,	101	178.	31.75	132/46	,,	169†	185.	55.	135/50	,,	154	304.8	101.6	Central
700×100	77	178.	44.45	132/46	1000×150	211*	185.	60.32	135/50	1500×300	115	304.8	101.6	Central
,,	92	185.	55.	135/50	,,	131	220.	66.67	Central	,,	126	304.8	152.4	Central
,,	95	185.	55.	Central	,,	150	185.	55.	Central	1750×300	139	400.	152.4	Central
,,	96	178.	55.	132/46	,,	167	185.	55.	125/60					
						174	250.	80.	Central					

**Wheels Nos. 161, 163 and 211 are of stronger type than the other wheels for 800 × 150 tyres.*
†Wheel No. 169 is fitted with Ball Bearings.

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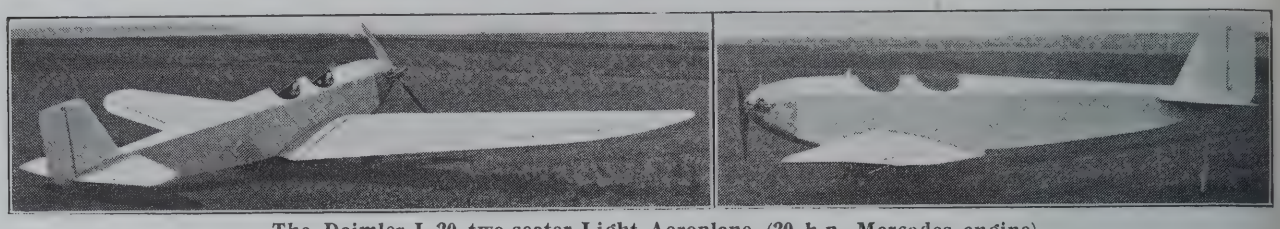
100-106, CANNON STREET, LONDON, E.C.4.

Telegrams: "TYRICORD CANNON, LONDON." Telephone: CITY 1477 (Two lines).

PARIS 31, Rue la Boétie.

SINK (240)

RUNDFLUG COMPETITORS.—II.



The Daimler L.20 two-seater Light Aeroplane (20 h.p. Mercedes engine).

The Daimler L.20 Light Aeroplane.

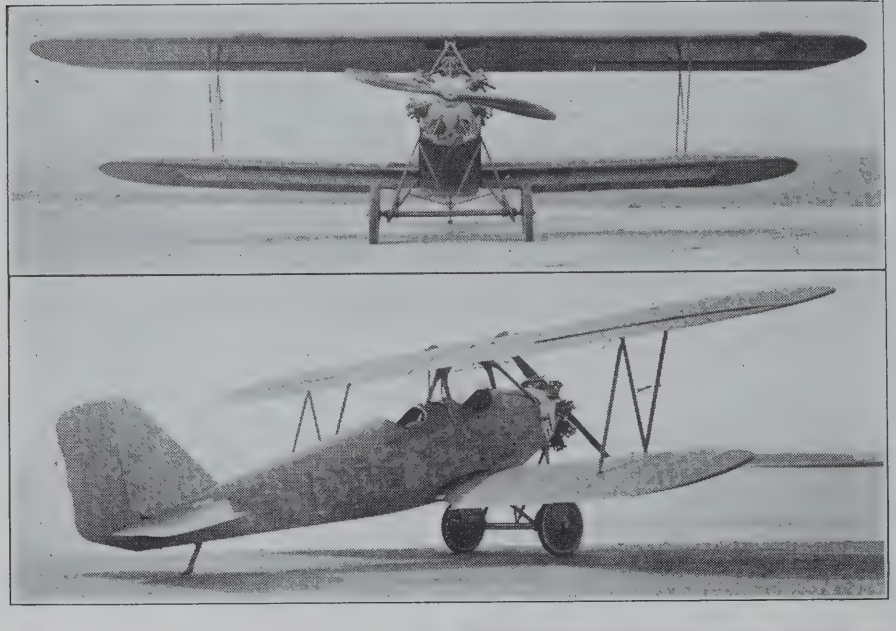
This machine shown in certain photographs herewith is a low-wing monoplane two-seater, fitted with a 20 h.p. two-cylinder opposed, Mercedes-Daimler engine of 885 c.c. capacity.

The machine is of normal timber structure, fabric-covered, and is arranged to permit the detachment of the wings and tail, and their stowage alongside the body for transport, with the minimum of trouble.

The L.20 flew extremely well in the Rundflug contest.

SPECIFICATION.

Span ... 13.0 m. (42 ft. 8 in.)	Wing loading ... 19.5 kg/m². (4 lbs./sq. ft.)
Length...7.27 m. (23 ft. 10 in.)	
Wing area.....20 m². (215 sq. ft.)	Power loading...19.5 kg./h.p. (42.8 lbs./h.p.)
Weight empty 220 kg. (485 lbs.)	Max. speed 100 km.h. (62 m.p.h.)
Weight loaded 390 kg. (856 lbs.)	Min. speed 60 km.h. (37 m.p.h.)
	Ceiling...3,500 m. (11,500 ft.)



The Heinkel H.D.32.

The photographs alongside represent the Heinkel H.D.32, a new machine which took part in the Deutscher Rundflug. It is fitted with a Siemens Halske nine-cylinder radial of 100 h.p.

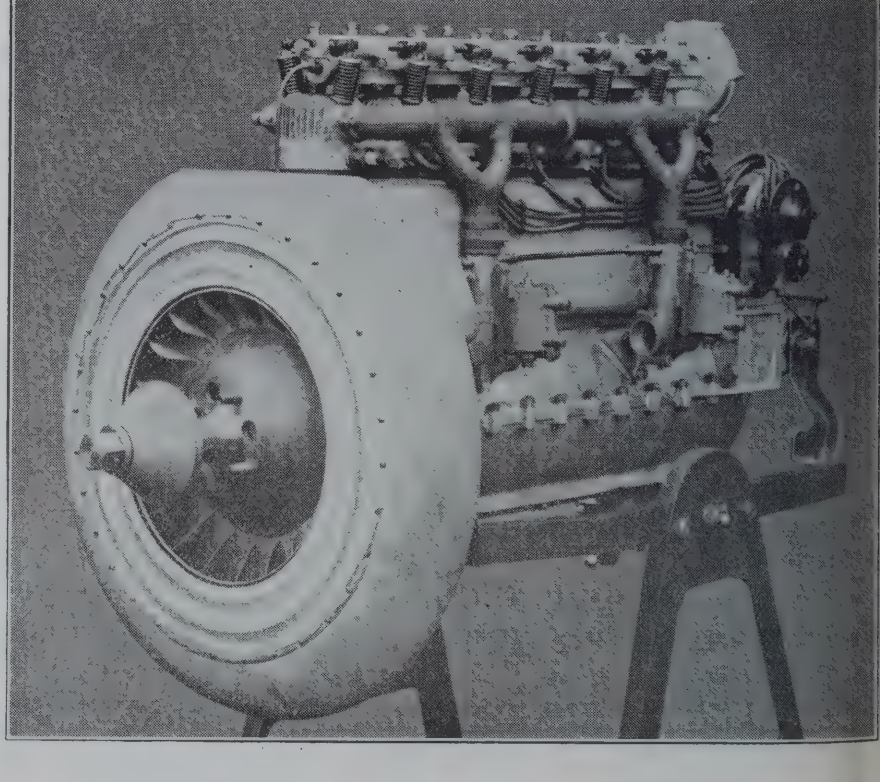
A similar machine with a Bristol Lucifer engine was entered but does not seem to have started in the contest.

SPECIFICATION.

Span 10.5 m. (34 ft. 6 in.)	
Length 6.8 m. (22 ft. 4 in.)	
Height 2.7 m. (8 ft. 10 in.)	
Weight empty 540 kg. (1,300 lbs.)	
Weight loaded 810 kg. (1,895 lbs.)	
Max. speed 145 km.h. (90 m.p.h.)	
Radius 500 km. (310 m.)	

THE JUNKERS L.1A ENGINE.—A six-cylinder vertical, air-cooled by a fan carried in the casing behind the air-screw hub. This engine was mounted in a number of machines that took part in the Deutscher Rundflug. It has bore and stroke 100 mm. by 120 mm. (5,670 c.c.), weighs 138 kg. (304 lbs.) and develops 75 h.p. at 1,650 r.p.m.

A very similar engine, the L.1b, also took part in the contest. This is rated at 85 h.p., but it is not known whether the extra output is taken at higher r.p.m. or whether the engine has been boosted by other means. It appears to be of the same cylinder capacity.





The Blackburn Company's designs are based on straightforward engineering practice embodying the most advanced scientific accomplishments. Steel continues to monopolise an ever increasing position in their designs.

16 years' reputation for reliability stands behind every machine, part or component leaving their Works.

Tel.: "Propellers, Leeds." **THE BLACKBURN AEROPLANE AND MOTOR CO., LTD., OLYMPIA, LEEDS.** *Tel.: 601 Roundhay.*

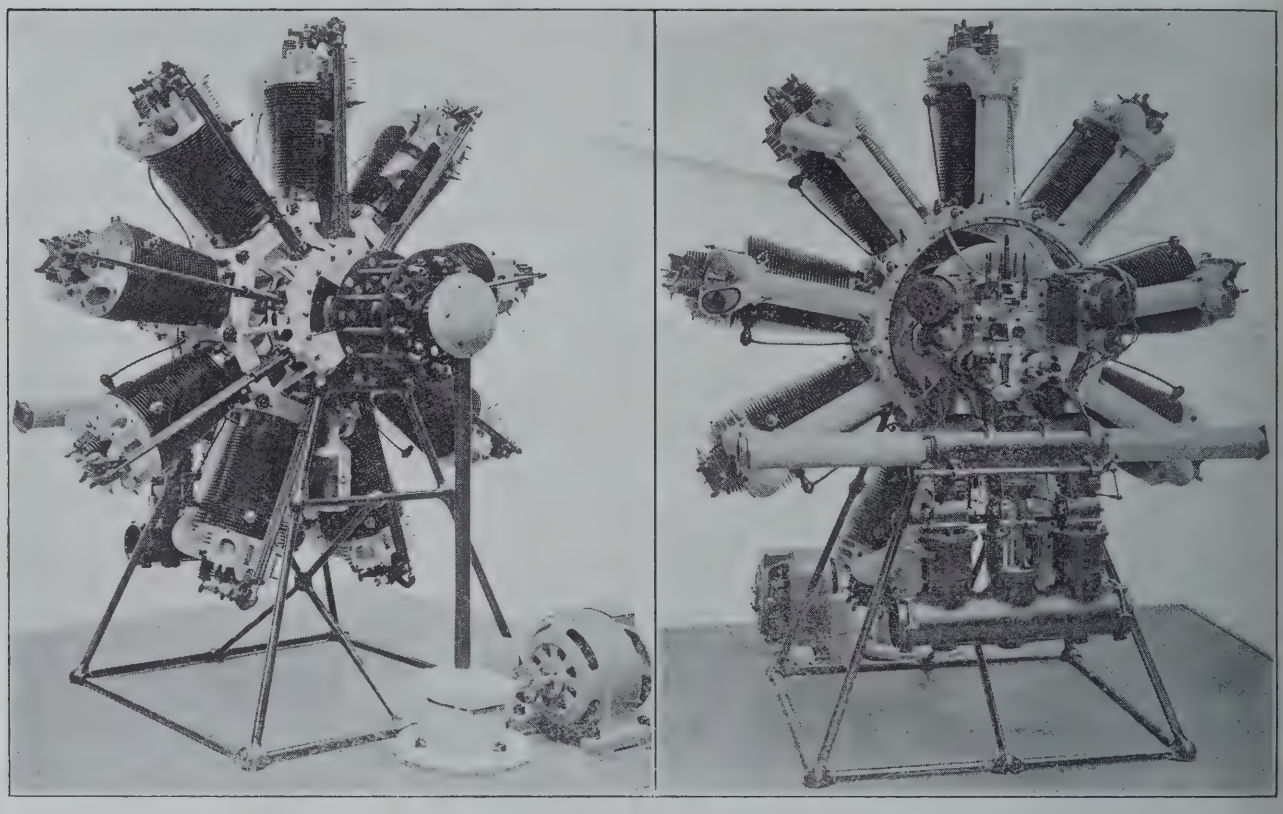
Experimental Factory: Brough, nr. Hull. **London Office: Amberley House, Norfolk Street, Strand, W.C.2.** *Tel.: Central 752*

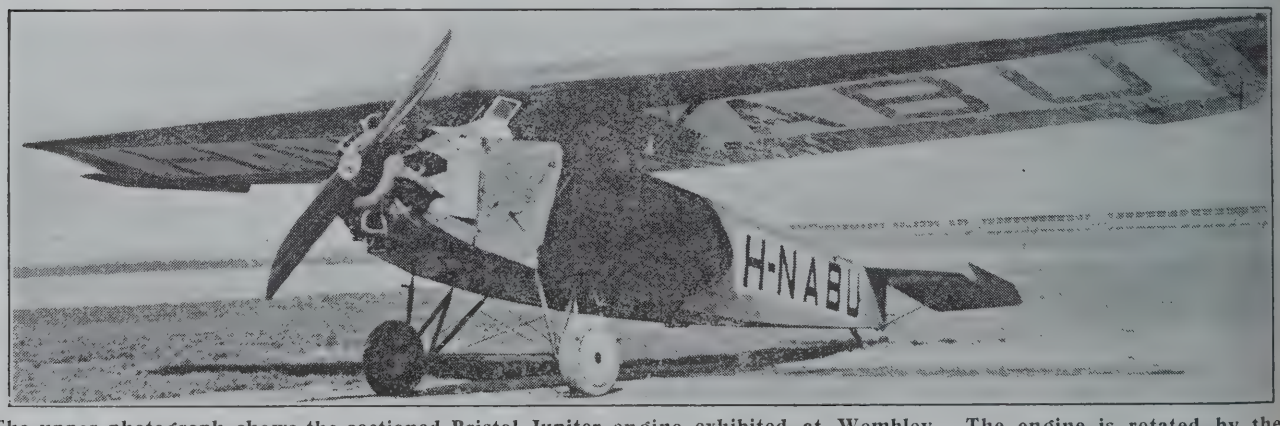
KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.



AN AMATEUR EFFORT.—The Mohamed monoplane (Blackburne Tom-Tit) built and flown by Students of the Darmstadt Akademische Fliegergruppe.

BRISTOLS, AT HOME AND ABROAD.





The upper photograph shows the sectioned Bristol Jupiter engine exhibited at Wembley. The engine is rotated by the small motor which is shown. The lower photograph shows a Fokker F.III fitted with the Bristol Jupiter engine.

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Cellon Doping Schemes provide Efficiency with Economy.

CERRIC CELLULOSE ENAMELS

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COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 19; Tuesday, 22; Wednesday, 22; Thursday, 20; Friday, 24; Saturday, 22; Sunday, 18.

IMPERIAL AIRWAYS LTD.:

London—Paris—Zurich; London—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 96, passengers 466, freight 9 tons.

AIR UNION:

Paris—London: Machines 35, passengers 184, freight 8 tons.

K.L.M.:

Amsterdam—Rotterdam—London: Machines 12, passengers 49.

DEUTSCHER AERO LLOYD:

Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES:

DE HAVILLAND AIRCRAFT CO. LTD.:

Machines 4, passengers 4.

Total number of trips by British machines: 100, carrying 470 passengers. Foreign machines: 47, carrying 233 passengers.

Comparative Figures.

For week ending June 14:

Machines, 147; Passengers, 703; Crews, 181; Total personnel, 884.

Corresponding week, 1924.

Machines, 116; Passengers, 391; Crews, 287; Total personnel, 678.

Corresponding week, 1923:

Machines, 121; Passengers, 378; Crews, 203; Total personnel, 581.

Corresponding week, 1922:

Machines, 106; Passengers, 168; Crews, 135; Total personnel, 303.

Corresponding week, 1921:

Machines, 91; Passengers, 300; Crews, 107; Total personnel, 407.

Corresponding week, 1920:

Machines, 94; Passengers, 194; Crews, 117; Total personnel, 311.

Croydon Notes.

The fine weather which has been having, we are always being told, such an adverse effect on the box offices of theatres (only with bad plays really) is having an excellent effect on the box office of Imperial Airways, Ltd., and most machines now leaving and arriving are fully loaded with goods and passengers.

People are beginning to wonder what Imperial Airways really intend to do about getting new machines. They will have the D.H.54, which has been doing remarkably well on test, in a few days or weeks; they should have the Jaguar Handley Page next month or the month after or perhaps later and that will be all this year if at all. Then early or late next year they should have three all-steel triple-Jaguar Armstrong Argosies, but that seems to be all.

It takes months and months to build commercial machines with the help or hindrance of the Air Ministry, so that it seems that if Imperial Airways intend to have any more machines before their ten years of subsidy expire now is the time to get brisk and think about placing orders. And then having ordered, they must not change their collective mind at all. That is to say if they have got a mind.

The Air Union amphibian experiment on the Thames at Hammersmith is to take place within the next fortnight. It has got to take place before 9 a.m., so that quite a crowd of early office-goers ought to see the splash.

In the absence of Mr. Perry in Portugal Messrs. Muir and Hayden, of the Surrey Flying Services, have been doing much of the test work for the Aircraft Disposal Company Ltd. Various Avros, both of the 504K and the Airdisco variety, the former for Spain, have been undergoing tests.

Mr. Alan Cobham, on Sylvia D.H.37, went off in an awfully secret hurry to Morocco on Tuesday, since when he has not been seen.—G. D.

PERSONAL NOTICES.

MARRIAGES.

CROKE—CHURCHER.—On June 10, at All Saints' Church, Lindfield, Lewis George Le Blount Croke, R.A.F., to Phyllis Mary, elder daughter of Mr. and Mrs. George Churcher, of Beckworth, Lindfield, Sussex.

DORE—GADSBY.—On June 13, at St. Gabriel's, Cricklewood, by the Rev. Noel Gill, Gerald Leo Hancock (late R.F.C. and R.A.F.), son of Mr. and Mrs. H. Dore, of 186, Walm Lane, N.W., to Barbara, youngest daughter of the late Mr. C. H. Gadsby and Mrs. Gadsby, of Hoveden Road, N.W.

FORTHCOMING MARRIAGES.

FLEMING—WHITE.—The engagement is announced of Robert Bruce Fleming, R.A.F., and Monica, youngest daughter of Mr. and Mrs. R. F. Moresby White, of Grantham, Lincs.

GNOSSPELIUS—COLLINGWOOD.—The engagement is announced between Maj. Oscar T. Gnosspelius, late R.A.F., only son of the late Mr. A. J. Gnosspelius, of Liverpool, and of Mrs. Gnosspelius, of Betty Fold, Hawkeshead, and Barbara, second daughter of Mr. and Mrs. W. G. Collingwood, of Lanehead, Coniston.

NICHOLLS—FAIRHOLME.—The marriage between Flg. Off. William Graham Nicholls and Miss Mary Ellen Fairholme will take place quietly at St. Mary's Church, The Boltons, S. Kensington, on July 18.

BIRTH.

NICHOLL.—On June 8, at Riverhill Lodge, Pope's Grove, Twickenham, to Sydney (*née* Gedge), wife of Flt. Lt. W. G. Nicholl, R.A.F.—a son.

ROYAL AIR FORCE FLYING DISPLAY

HENDON. ***SATURDAY, JUNE 27th***

WORLD'S GREATEST AERIAL SPECTACLE

A Flying Display of surpassing interest will be given by the Royal Air Force demonstrating the latest and most scientific methods in air warfare.

A feature will be Wing evolutions in the air by four day-bombing squadrons which are used for counter-offensive operations on enemy territories and flight evolutions by single-seater fighters which are used for defensive purposes against enemy bombing raiders.

The latest types of war and civil aircraft will parade past the Royal Enclosure before THEIR MAJESTIES THE KING AND QUEEN.

OTHER SPECTACULAR EVENTS INCLUDE:

Destruction of a Naval Cruiser by largest types of bombing aircraft.
Squadron Drill by Radio Telephony.
Realistic Aerial Combats. Flying Evolutions.
Low Bombing on Ground Targets.

OVER 100 AIRCRAFT WILL TAKE PART,

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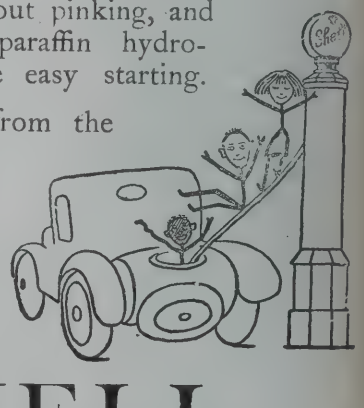
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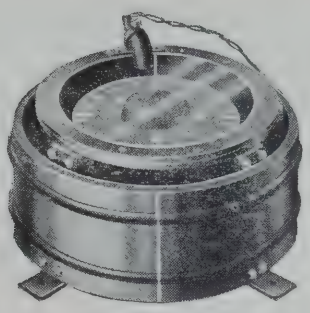


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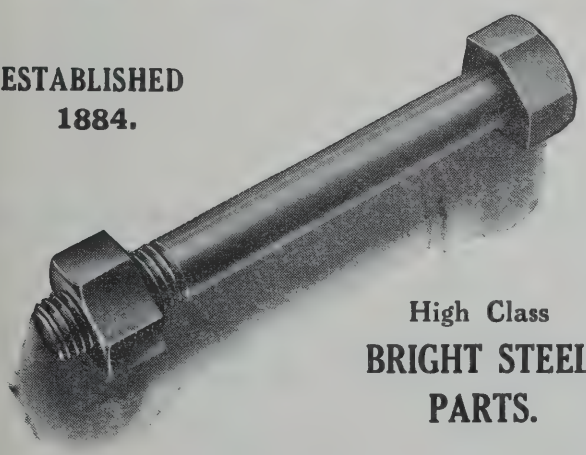
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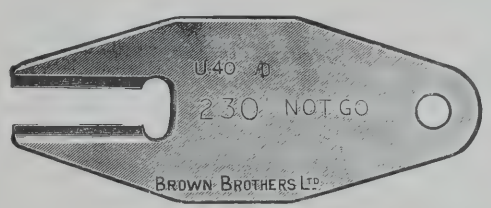
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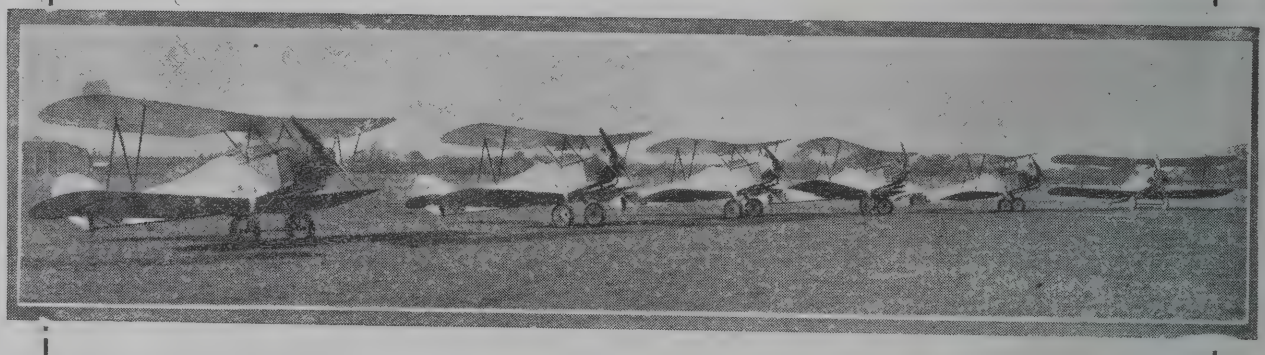
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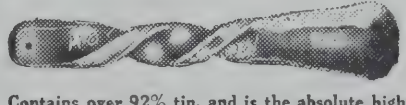
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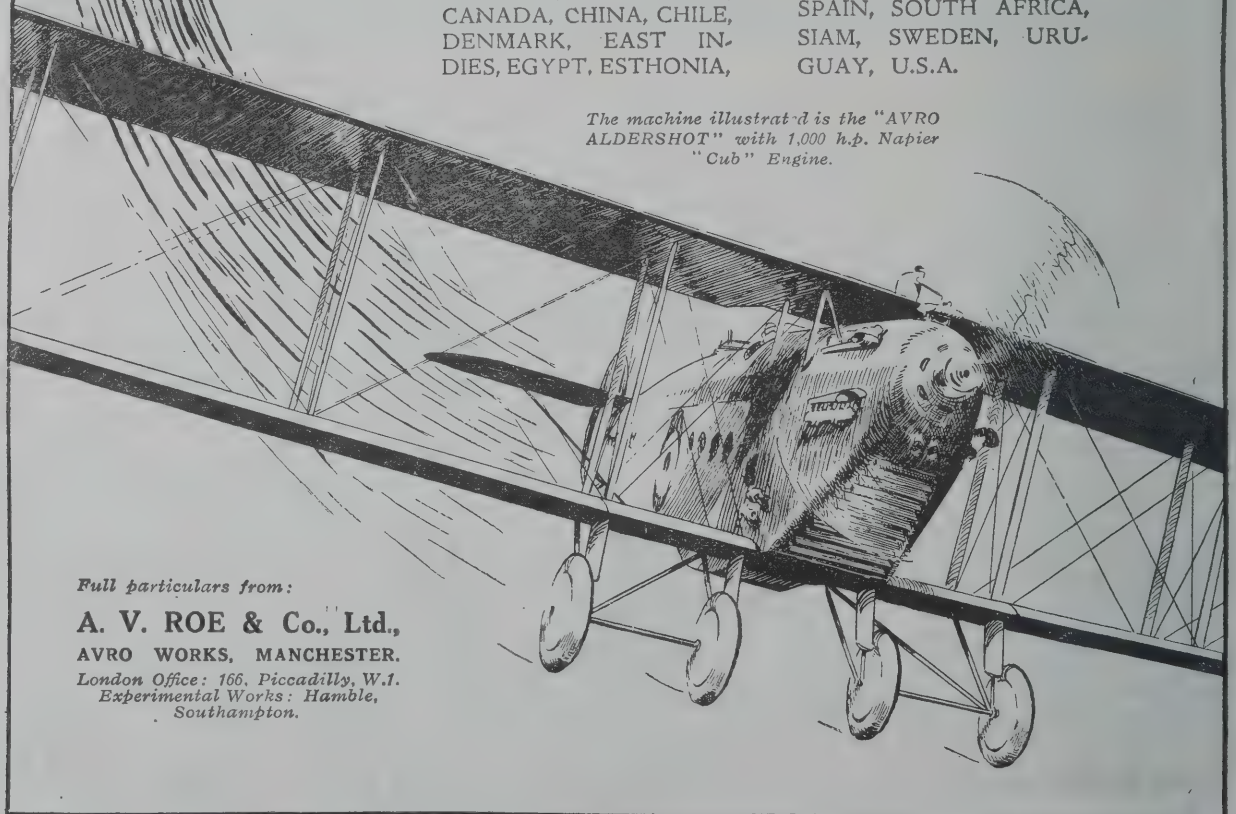
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ON SCIENTISTS AND ENGINEERS AND THE R.A.F.—II.

Technical Training for Pilots.

In the previous article on this subject, published on June 3, one dealt with the possibilities and impossibilities of a civilian Engineering Department within the Air Ministry and of an Engineer Corps within the R.A.F. itself, and agreed that both are impossible, at any rate under present conditions.

That brings us to the third alternative, which is that every flying officer should be given sufficient technical training to make him competent to run his own machine, which is the principle to which the Chief of the Air Staff referred when he said that every pilot must understand his engine and aeroplane at least as well as an owner-driver understands his car. At the same time one submits with all due deference that the owner-driver analogy is a little bit dangerous.

There is quite a lot of difference between the owner-driver who knows enough about his car to go and put it in the hands of a thoroughly good workshop when he wants a job done to it and the owner-driver who thinks he knows everything about his car and insists on trying to do all the mechanical jobs himbself and arrives at the stage where, having taken his engine to pieces to save the expense of having it done in a workshop, he puts it together again, and finds that there are lots of parts left over for which he cannot find places.

One remembers an amateur mechanic of that kind who had an eight-day clock given to him for a wedding present. He found that when he wound it up fully at the beginning of the week it used to gain, but that at the end of the week it was losing time. So as he "esteemed himself so as to be clever," in the words of Stalkey, he took it all to pieces and removed the eight-day gear-wheels so as to make it into a one-day clock. He put it together again quite beautifully, but when he wound it up he found that it went backwards. And it never struck him that he could have got over the difficulty by merely winding it up once a day instead of letting it run for the full eight days.

There is also the sad story of the owner-driver who took his car completely to pieces during the winter, when he did not want to drive it, and put it together quite successfully without leaving any parts outside, but when he went to drive it found that he had only one speed forward and three reverses.

Furthermore, one very much doubts whether even the most enthusiastic owner-driver who does not keep a chauffeur can possibly maintain his car in the state of absolute perfection attained by those of the Daimler Hire Service as organised by Colonel Searle and Major Woods Humphery.

Also there are a great many owner-drivers who are magnificent drivers and yet barely know enough about their cars to be able to change a sparking-plug.

Similarly there are a great many pilots who are splendid pilots as such, with beautiful hands and wonderful judgment of speed and distance and a perfect sense of feel for what their machines are doing, who are quite incapable of understanding the principles on which their engines work.

The late Gustav Hamel was an outstanding case in point. He knew instinctively what his machine would do, simply by the feel of it. But he never had the remotest notion of why he did it. And in the end he lost his life through starting out cheerfully to fly across the Channel with an engine which nobody with any sound knowledge of engines would have trusted to do the journey.

The Supply of Engines.

Yet, of course, one agrees that an attempt should be made to teach every officer in the Air Force to fly and to teach him as much as his mind can absorb about aerodynamics and the mechanism of his machine and its engine. None of them can be any the worse for such training. Some of them may be a great deal better for it. And a certain number when given the opportunity of learning may develop into first-class engineers. And presumably it is from this third category that the Air Force will in future draw its supply of technical people and workshop officers.

At the present moment the Air Force List does distinguish its technical officers from the rest by marking against the names in the Gradation List "E" for a qualified engineer officer, and "E*" for a qualified engineer officer who "has passed a University Course in aeronautical engineering or its equivalent." Therefore evidently the idea is to follow more or less the existing Naval principle of giving special training to those officers who show themselves disposed to be technical, and of developing their natural ability to the highest possible degree.

It is evident that the success of this scheme will depend entirely on the quality of the training which the R.A.F. is able to give to its officers. The same proviso applies of course to the Navy. That is to say, if a Lieutenant (E) R.N. were given as good a training as was given to the old Engineer Officer R.N. at Keyham then he would be just as good an engineer. But the trouble with the Lieutenant (E) R.N. is that he merely does an "engineering course," and it is impossible in the course of a "course" to make a man a trained engineer.

Real Engineering Training.

If the R.A.F. took a young officer who had done perhaps a couple of years' flying and had shown himself to be keen on engineering, and then put him for say three or four years onto pure engineering work, just giving him enough flying every week to prevent him from getting out of practice and to keep him up-to-date on modern machines, he might at the end of that time justly claim to know as much about engineering as does a really intelligent premium pupil who has done his three or four years in one of the big engineering shops, such as Vickers or Armstrongs. But after that he would still have to be kept on engineering work if ten or twenty or thirty years later he was to reach the same standard of engineering knowledge as is reached by a man with the same number of years constant experience in factories.

That is to say, if the chief engineering officers in the R.A.F. twenty years hence are to be as competent, con-



THE R.A.F. ATHLETIC CHAMPIONSHIPS.—The start for the One Mile Team Race—Junior Championship.

DO NOT FORGET THE R.A.F. DISPLAY AT HENDON ON JUNE 27.



AT THE R.A.F. CHAMPIONSHIPS.—The Teams at the R.A.F. Stadium at Uxbridge.

sidered as engineers, as are professional civilian engineers between forty and fifty years of age, they must not be taken away from their engineering work and sent to command squadrons and wings and things as they rise in rank. No man can serve two masters and no man, unless he happens to be one in a million, can be a first-class engineer and a first-class leader of fighting men.

It is true that officers of the Royal Engineers, such as Lord Kitchener, have commanded armies. But either they ceased to be engineers ten or twenty years before they became leaders of men or else they have remained inherently engineers and have been the worse leaders of men because of it. For no human brain could grasp both the Science of War, as laid down by von Clausewitz and others, and the Science of Engineering, as well. No Engineer Officer in the Navy has ever commanded a Fleet, because the conditions of the Service have made it impossible owing to the fact that no Engineer Officer of such seniority has ever held executive rank. And one doubts very much whether any Lieutenant (E) R.N. who has remained on engineering work will ever become an Admiral commanding anything but a dockyard.

The Process of Evolution.

The fact of the matter seems to be that in the end the R.A.F. will evolve its own engineers and scientists from the flying officers (E) and the flying officers (E*) respectively and that in fact though not in theory they will perform the functions of a Corps of Engineers.

The assumption is that of those officers who take an engineering course a certain number whose interests are purely practical will become quite good enough to take charge of squadron workshops, after a course of training in the care and maintenance of the current standard types of aeroplanes and engines at one of the big depots, such as Henlow. And these officers, if they do not devote themselves entirely to engineering may after a period in charge of workshops take over command of squadrons as ordinary squadron leaders.

Certain others whose intelligence is higher or whose keenness for engineering is greater may go a step further and be put in charge of depots such as the Inland Area Depot at Henlow and the big depots in Egypt, India and Iraq. And as such they may rise to the rank of Group Captain, and undoubtedly in due course the Air Member for Supply and Research at the Air Ministry will be an officer marked "E" or even "E*" in the Air Force List.

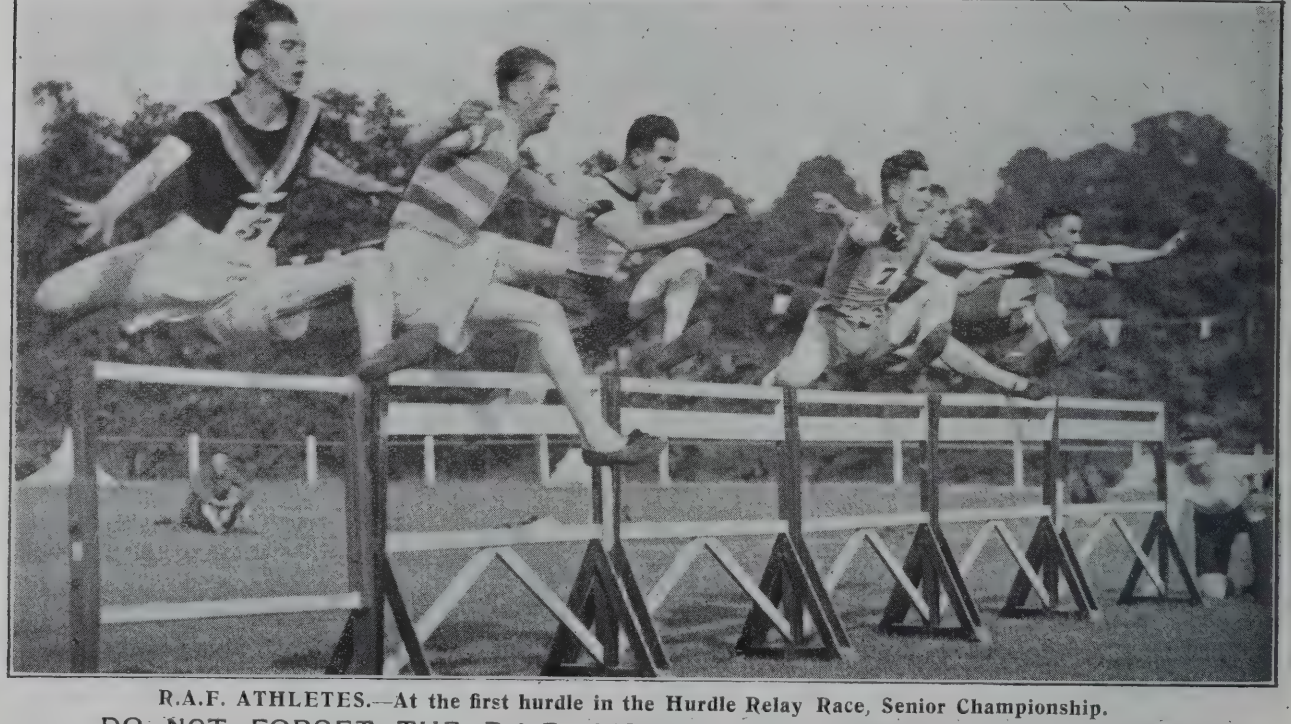
The Question of Competence.

Thus there is evidently plenty of opportunity for such officers as care to devote themselves to engineering to rise to considerable rank in the R.A.F. But the great question is whether in doing so they will also be thoroughly competent engineers.

One has already got oneself sufficiently disliked by expressing opinions as to what is real engineeering and what is not. Therefore perhaps the less one says on this subject the better. One will only say that the aim and object of the Air Council should be to produce in the Air Force itself engineers who are the equivalent of the old Keyham-trained engineers in the Navy rather than the Lieutenants (E) R.N. of to-day.

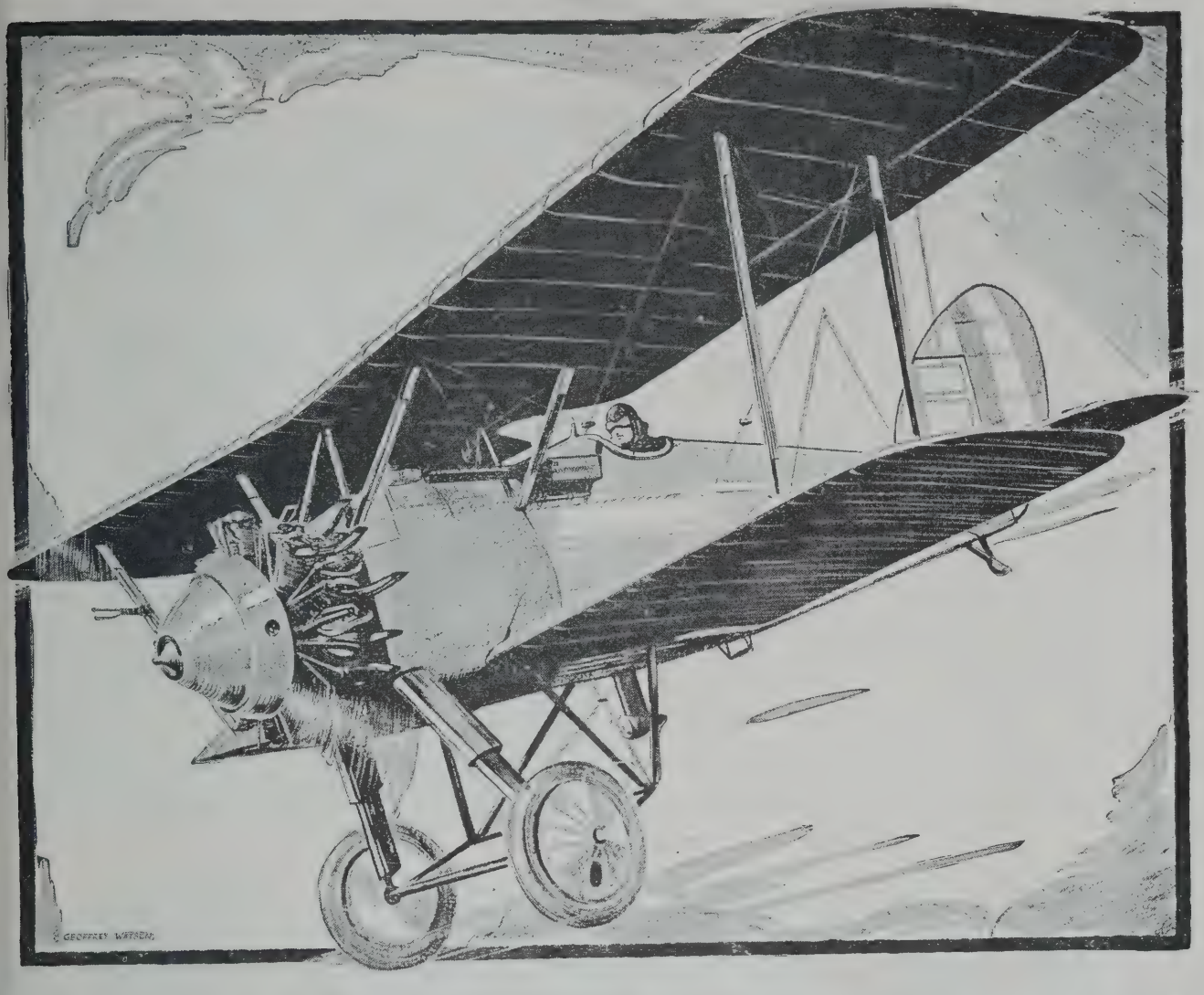
Unfortunately there are grounds for doubt whether the Air Force itself includes any trained engineers who are competent to produce trained engineers from among the younger officers. The old R.N.A.S. had among its officers sundry very able Engineer Officers, R.N., of whom the first were Engineer Lieuts. Briggs, Aldwell and Randall. The first-named is still in the R.A.F. as a Group Captain, the second was invalided out, and is now a country gentleman and a pillar of the Church, the third retired recently owing to eye trouble much to the regret of all who served with him. The task of the R.A.F. is to produce engineers of similar capacity.

It is true that the best teacher at a school is one who is himself only one lesson ahead of his class but one doubts whether teachers who know little more than their pupils can produce first-class engineers in the R.A.F. The only con-



R.A.F. ATHLETES.—At the first hurdle in the Hurdle Relay Race, Senior Championship.

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solation is that all aeronautical engineering is so young (with all due respect to the Trade) that the senior officers in the R.A.F. who constitute the engineering specialists at the R.A.F. depots know just about as much as there is to be known at present.

Certainly if one may judge by results of a purely mechanical nature these senior officers are very competent at their jobs. Engines and aeroplanes which have been overhauled and rebuilt at the Depots do their work at home and abroad just as well as if they were new aircraft or new engines fresh from the factories. And that of course is the supreme test of effectiveness. But that alone is not enough to qualify R.A.F. officers as engineers. It only means that they are very competent mechanics—and mechanical engineering is not the highest form of engineering. Also we must remember that rebuilding or reconditioning old types of aeroplanes and engines does not require any knowledge of design work, which is the higher phase of any branch of engineering. Officers in command of depots and instructors of aircraftsmen and other engineer officers need have no knowledge of the theoretical side of aeronautical engineering. And they have no chance of acquiring such knowledge.

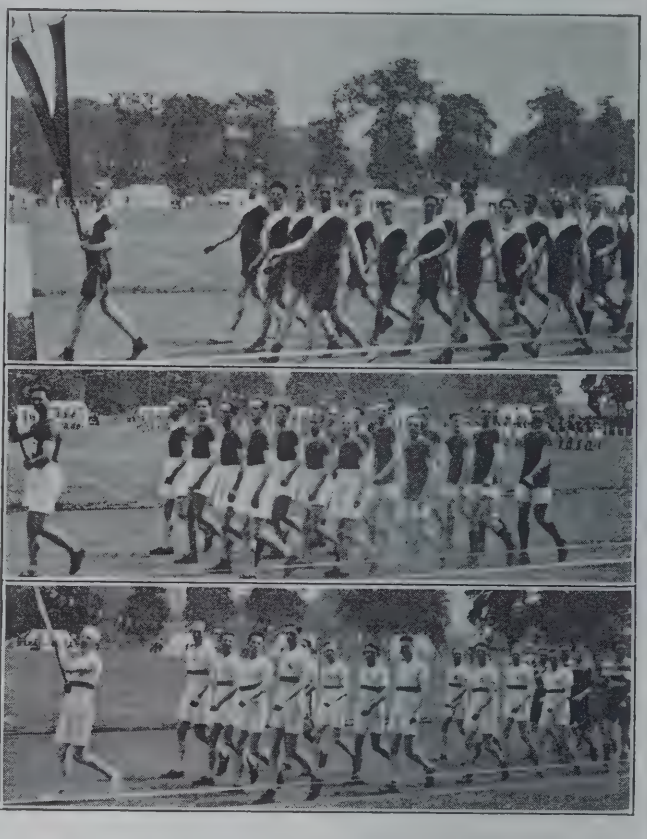
There should be scope for originality of idea. And there should be an outlet for those brilliant brains which must exist somewhere in the R.A.F. and are capable of actually promoting aeronautical progress not only for the good of the R.A.F. but for the good of the Aircraft Industry and of British Aeronautics as a whole.

University Training.

This presumably is the intention behind the idea of sending officers to Universities for special courses, where they may acquire the coveted "E*" against their names in the Air Force List. But here again one is up against the unfortunate fact that Aeronautical Science itself is extremely young, and that the teachers of Aeronautical Science at the Universities are themselves rather in the position of the blind leading the blind.

Therefore the competent and ambitious young R.A.F. officer who has a natural inclination for engineering should be very careful before he commits himself to a University course or he may find himself at the end of his course full to the brim with marvellous formulæ which really lead nowhere because they are based on insufficient initial knowledge.

So far as one has been able to discover, the most successful aeroplanes in the World have been built by eye rather than by the manipulation of figures. Of course a certain amount of figure-shifting is necessary in calculating sizes of spare and other parts, merely to get the strength of the parts adequate to take the known stresses which will be imposed on them. But one can always hire stress-merchants for





AT THE R.A.F. CHAMPIONSHIPS.—THE ENTRY OF THE TEAMS.—Left-hand column, from top, Halton, Lee-on-Solent, Sealand. Right-hand column, Hawkinge, Andover, Ruislip, Digby, Gosport, Henlow.

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Practice versus Theory.

Readers of this paper will remember how not very long ago an ancient Martinsyde biplane, designed by Mr. George Handasyde actually during the War 1914-18 and produced very shortly after the Armistice was fitted by the Aircraft Disposal Company with an up-to-date Armstrong-Siddeley Jaguar engine and promptly proved itself to be a good many miles an hour faster than the fastest fighting machine in the possession of the Royal Air Force at that moment.

Now George Handasyde, who is a typical Clydeside engineer with an old-fashioned engineering training, having designed some of the very best aeroplanes produced during the War is naturally not employed on aircraft design to-day. But when he was doing his best design work he used to have a theory, which he was fond of expounding, to the effect that if one were building a new type of aeroplane that aeroplane had every chance of being a successful flying machine so long as each stage of its construction was at least three weeks ahead of the drawing office, but that if the drawing office once overtook the aeroplane and the constructor had to work to the designs of the drawing office then the machine's chance of ever flying at all became negligible.

Roughly speaking—as he generally did—his idea was that the way to make a successful aeroplane was to build your aeroplane first and then let the drawing office copy it so that the drawings could be sent into the workshops to assist production in quantities. Of course that is a slight exaggeration of his real ideas on the subject. But the truth is that his successful aeroplanes used to be produced with the minimum amount of drawings and calculations, and that in fact the serious work of the drawing office really began only when the type was put into production.

At the other extreme of the scale is the scientist who thinks he knows so much that he has every detail of his machine worked out on paper, and parts put through to his drawings, only to find that the parts do not fit and that when they have been made to fit the aeroplane is a very inferior flying machine. And that is precisely what is the matter with a great many aeroplanes all over the World in these days.

The Scientific Attitude.

So long as the R.A.F. Officer who does a University course does not acquire the mental attitude of the species of scientific expert who has done so much harm to the Royal Air Force and to the Aircraft Industry in the last few years, and so long as he is compelled to do a good deal of flying when he is not actually working at the University, and so long as he is dragged out at intervals and made to do ordinary duty with a squadron, he may become a very useful member of the aeronautical community.

At any rate, if only all the civilian experts in the Air Ministry—and in that detachment from the Air Ministry which is unfortunately sent down to Farnborough, where, one gathers, it is acquiring quite a good deal of the unpleasant atmosphere of the old Royal Aircraft Factory—can in time be replaced by E* officers of the Royal Air Force there is some hope that progress may be made in British Aviation, thanks to the fact that these people will at any rate be Air Force officers first and scientists as an afterthought instead of being merely scientists or experts in some gadget or other who do not care whether the Air Force ever has any machines, or whether any of its machines ever fly, so long as their own particular little theories prove themselves sufficiently well to allow them to hold down their own jobs.

The General Scheme.

To sum up the whole position, the idea seems to be that instead of a civilian Engineering Department, or uniformed Engineering Corps, or a special engineer rank without executive command, the R.A.F. shall have a number of specially trained engineer officers, which we may call Grade A—that is to say University-trained scientists who at present are marked E*—and that there shall be as Grade B the practical engineer who has so devoted himself to engineering that he has practically been removed from ordinary executive duties, and as Grade C the ordinary squadron workshop officer, who may of course be serving in his own rank at one of the big depots under a Grade B man. Thus it will be possible to produce in due course a very effective system of Air Force engineering without all the trouble and complication of separate departments or separate ranks.

There will be considerable interest in watching the development of the idea. At any rate so long as the scheme is approved by the Chief of the Air Staff everybody may be sure that all ranks in the R.A.F. will give it loyal support, and one believes that on the whole it will be liked by the Trade, who will certainly be very much more pleased to deal with R.A.F. officers on technical matters than with the civilian experts who have done so much harm up to the present.—

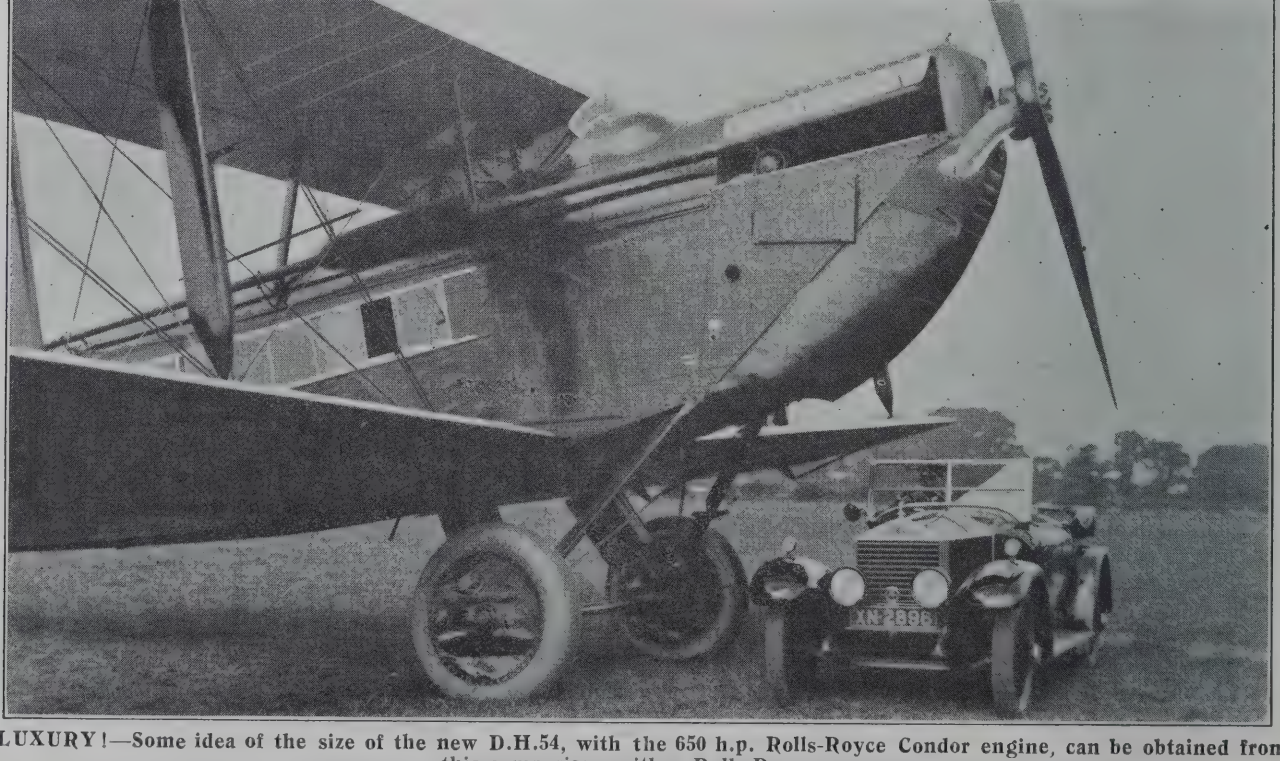
C. G. G.

A Sign of the Times.

The following paragraph is taken from some Notes on the R.A.F. Display issued by the Air Ministry on June 20 :—

"The main spectacular piece this year will consist of an attack on an enemy naval cruiser which, after ranging at large on main trade routes, has taken refuge in a tropical river where, hidden by vegetation, she lies in fancied security. Her retreat is discovered by a reconnaissance machine which is attacked by guns from the cruiser. Fleet fighters then attack the gun crews while following them is a massed formation of heavy bombing aircraft, the largest existing service types, which proceed to attack the cruiser with heavy bombs."

A naval cruiser "hidden by vegetation" is good. One has heard of the ship which was left so long at one station that she was aground on her own gin bottles, but a naval cruiser overgrown by moss and other vegetation is a new monument to the Senior Service. Somehow it seems allegorical.

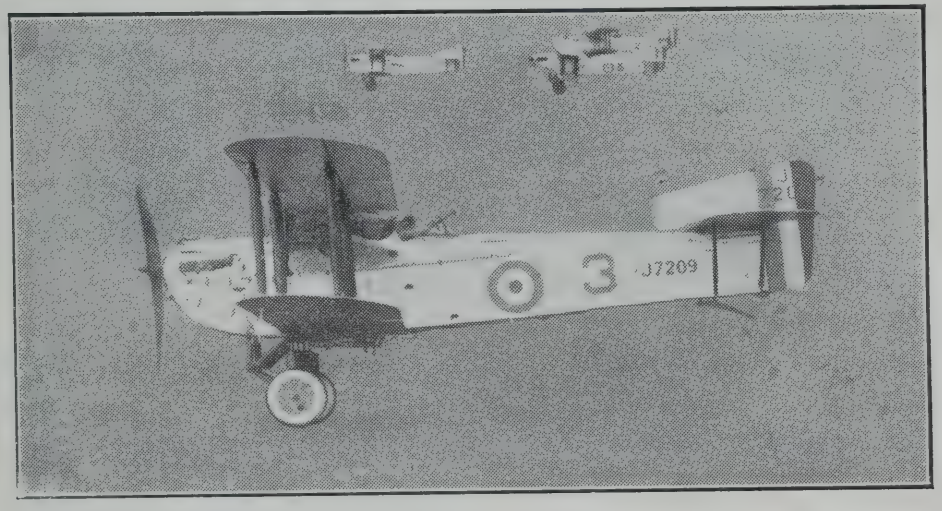


LUXURY!—Some idea of the size of the new D.H.54, with the 650 h.p. Rolls-Royce Condor engine, can be obtained from this comparison with a Rolls-Royce car.

DO NOT FORGET THE R.A.F. DISPLAY AT HENDON ON JUNE 27.

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THE ROYAL AIR FORCE.

The London Gazette.

June 16.

GENERAL DUTIES BRANCH.—The following Plt. Offs. are promoted to the rank of Flg. Off.:—A. S. Lewis (Dec. 14, 1924); H. N. Davies (Feb. 16); K. Maconochie (May 15); L. H. Ross (May 15); C. H. W. Boldero (May 15); C. F. Caunter (June 10).

The following Plt. Offs. on probation are confirmed in rank (May 23):—H. S. Martin, P. E. G. Sayer.

Flg. Off. R. G. Chapell takes rank and precedence as if his appointment as Flg. Off. bore date Mar. 31; reduction to take effect from Apr. 9. Flt. Lt. H. W. Clarke is transferred to the Reserve, Class C (June 17). Sq. Ldr. T. B. Meyer relinquishes his S.S. comn. on account of ill-health, and is permitted to retain his rank (June 17).

The following relinquish their temporary R.A.F. comns. on return to the Royal Navy or Royal Marines:—K. E. Smith, Lt., R.N., Flg. Off., R.A.F. (June 7); C. J. Fell, Lt., R.M., Flg. Off., R.A.F. (June 11).

ACCOUNTANT BRANCH.—Flg. Off. D. J. Sherlock is granted a perm. comn. in the rank stated (June 17).

MEDICAL BRANCH.—Flg. Off. L. P. McCullagh, M.B., is granted a perm. comn. in the rank stated (June 17); Flt. Lt. W. G. L. Wambeek is promoted to the rank of Sq. Ldr. (June 18).

RESERVE OF AIR FORCE OFFICERS.—C. H. E. Coles is granted a commission in Class A, General Duties Branch, as a Plt. Off. on probation (June 16); Plt. Off. C. G. Gass, M.C., is promoted to the rank of Flg. Off. (May 6).

The following are confirmed in rank (June 16):—FLG. OFFS.— J. J. Flynn, J. H. Halliwell, J. A. Middleton, M.C. PLT. OFFS.—A. D. M. Blair, T. E. Greenough, E. F. D. Gregory, G. H. Smith, M. A. Vachon, K. C. Whitwell, E. T. Shone, D. M. Tomlinson. Flg. Off. C. F. D. Evans is transferred from Class A to Class C (June 12).

Appointments.

Week ending June 22.

GENERAL DUTIES BRANCH.—Flight Lieutenants D. W. King, to R.A.F. Depot on transfer to Home Estab., 3/6. R. Gambier-Parry, to R.A.F. Depot, 1/7

Flying Officers A. J. E Broomfield, D.F.C., to No. 1 Wing H.Q., India, 25/3. R. E. H. Allen, to Air Ministry, 25/6. L. D. Stewart, to R.A.F. Base, Gosport, 9/6. T. O. Oakes, to No. 70 Sqdn., Iraq, 3/5. W. C. Yale, to R.A.F. Depot on transfer to Home Estab., 22/5.

Pilot Officer P. Stainer, to No. 1 School of T.T. (Boys), Halton, 17/6.

MEDICAL BRANCH.—Flight Lieutenant R. Boog-Watson, M.B., D.P.H., to R.A.F. Officers' Hospital, 1/7.

Flying Officers G. Clark, M.B., to R.A.F. Depot on transfer to Home Estab., 22/5. F. P. Scholfield, M.B., to Station Commandant, Iraq, 12/5. A. Harvey, M.B., to H.Q., Egypt, 5/6.

The Air Ministers' Offices.

The Air Ministry announces that Sir Samuel Hoare, Secretary of State for Air, and Sir Philip Sassoon, Under-Secretary of State for Air, with their personal staffs, have removed their offices from Adastral House, Kingsway, to Gwydyr House, Whitehall, which will in future be their official address. The Air Ministry as a whole remains at Adastral House.

[There is nothing to indicate whether this is the first step towards the Air Ministry taking over the Admiralty or vice versa.—ED.]

A Fatal Accident.

The Air Ministry regrets to announce that as a result of an accident at Peshawar to a D.H.9a of No. 60 Sqdn., Risalpur, on June 21, Flg. Off. Norris Carden Bretherton, the pilot of the aircraft, and No. 240535 Acting Sjt. Henry Eustace Blanche were killed.

The R.A.F. Medical Service.

At a meeting of the Chadwick Trust in the Barnes Hall, Royal Society of Medicine, on May 25th, Sir William Collins presented the Chadwick gold medal and prize of £100, in recognition of his work on the R.A.F. Sand-fly Fever Commission, to Wing Commander Harold Whittingham, M.B., D.P.H., D.T.M. and H., R.A.F.M.S.

Wing Commander Whittingham is O.C. the R.A.F. Pathological Laboratory at Halton. Previously he was at the R.A.F. Research Laboratory, Hampstead. In 1921 he was attached to the Mediterranean Group at Valetta, Malta, for the purpose of Medical Investigation in connection with Sand-fly Fever.

In thanking the Trustees for the gift Wing-Commander Whittingham stated that certainly Providence had aided him and his fellow-workers in their efforts to solve the problem of sand-fly fever. One evening he was working in a room with some of his pet flies, when one of them escaped through the window. Knowing the habits of these particular flies, he went outside to see whether he could locate it. In stooping down, some drops of dew ran down his back and caused him to look at the bottom of the wall of the house. Here he saw what they had been trying to discover, namely the breeding places of these flies, and it was from this fact that they were able to find out the amount of moisture that the pests require to breed comfortably.

Air Affairs in Parliament.

ENGINE TESTS.

In the House of Commons on May 26, in reply to SIR F. SYKES, who asked how mang aero engines and how many types of aero engines had been tested to destruction in the year ending Mar. 31, 1925, the Secretary of State for Air said:—

"If by testing to destruction my hon. and gallant Friend means testing until definite failure is disclosed, the answer is that every type of engine under test, amounting to 26 types in all, was so tested in the year ending Mar. 31 last.

"The object of these tests is to obtain a progressive increase in the power output of engines while conforming to the prescribed standard of reliability, and failures occurring in any particular tests indicate the modifications required before an engine can be accepted at the rating which is being aimed at.

"It would be a matter of great difficulty to give the exact number of engines concerned, since the same engine may be submitted to test many times and may develop either the same or different failures at different times, and, moreover, the tests are carried out at various centres, the records of which would have to be consulted."

FLIGHTS OVER GERMANY.

In the House of Commons on May 25, MR. ALBERY asked the SECRETARY OF STATE FOR FOREIGN AFFAIRS whether, in view of the German refusal to allow any regular British air service to cross to Czecho-Slovakia, he proposed to take any action. MR. CHAMBERLAIN said that the German Government were free to sanction or refuse to sanction such flights of aircraft over their territory as they thought fit.

SINGAPORE.

In the House of Commons on May 27, in reply to SIR GERALD STRICKLAND, the SECRETARY OF STATE FOR AIR said that the only expenditure from Air Votes for the defence of Singapore contemplated this year was a sum not exceeding £300 for a detailed survey of the site of the aerodrome. It was impossible to give an approximate estimate of the cost of the scheme.

QUALIFIED PILOTS, R.A.F.

In the House of Commons on May 27, in reply to COLONEL WOODCOCK, the SECRETARY OF STATE FOR AIR said that the percentage of pilots qualified or under training in relation to the total number of officers in the R.A.F. was 74, and in relation to all ranks, approximately 8. As regards the French Service a large number of the personnel engaged in duties connected with the Air Service were borne on the military and naval establishments, but the percentage of flying in relation to ground personnel was probably much the same as in the R.A.F.

RECRUITING.

In the House of Commons on May 27, in reply to a question by MR. BECKETT, SIR S. HOARE said that the approximate expenditure in recruiting advertisements in the six months ending Mar. 31 was £1,620. MR. PALING asked whether we were getting the necessary number of recruits, and CAPT. GEE thought the amount ought to be doubled. SIR S. HOARE said that the recruiting figures were not unsatisfactory.

IRAQ.

In the House of Commons on May 27, in reply to CAPT. WEDGWOOD BENN, the SECRETARY OF STATE FOR AIR said:—"As already reported in the Press, a regiment of Levy Cavalry was attacked by Kurdish bands in the neighbourhood of Sulimaniyeh on May 20 and 21. After some sharp fighting, in which aircraft of No. 1 Sqdn., R.A.F., co-operated,



THE R.A.F. STAFF COLLEGE.—The Commandant, the Adjutant the Officer i/c Flight, and the Personnel of the Flight.

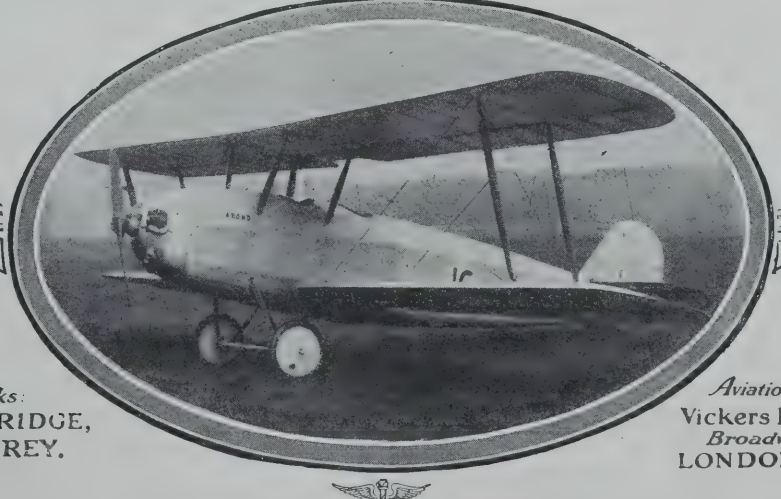
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ROYAL AIR FORCE DISPLAY, HENDON, JUNE 27th.

the attack was repulsed. There were no British casualties, but I regret to state that the Iraq forces lost 10 killed and 18 wounded. The marauding bands suffered materially heavier casualties."

AIRSHIP BASE, KARACHI.

In the House of Commons on May 27, in reply to a question by MR. SPENCER (for MR. VIANT), the SECRETARY OF STATE FOR AIR said that the site for an airship base in India had been selected. No operations had begun and although other sites for mooring masts had been examined the erection of a mast elsewhere than at Karachi was not contemplated in the experimental stage. There would probably be an intermediate mast in Egypt.

In reply to a further question by MR. SPENCER, SIR S. HOARE said:—"The Air Ministry hope to establish the reliability of commercial airship services, not by means of the flights of any particular ship, such as the R.33, but by a comprehensive programme of experiment and research. The break away of the R.33 has, however, demonstrated that a damaged airship can ride out a storm and return safely to her base, and when this ship has been reconditioned she will carry out a further series of flights for the purpose of obtaining certain essential aerodynamical and other data affecting design, stresses, etc. Our anticipations as to the reliability and safety of the airship for the operation of commercial services are, I think, justified even on a basis of the experience obtained to date; but I should prefer not to treat the matter as proved until one or more vessels have actually been tried out on a commercial route."

COMPASS DEVIATION.

In the House of Commons on May 27, in reply to a question by SIR F. SYKES, the SECRETARY OF STATE FOR AIR said the forced landing on May 17 of a civil aircraft bound from Cologne to Croydon was caused by the fact that the pilot was flying by compass owing to hazy weather and a serious deviation of the compass was caused by the proximity of a load of pocket-knives on the machine.

THE R.A.F. RESERVE OF OFFICERS.

In the House of Commons on May 28, in reply to a question by LIEUT.-CMDR. KENWORTHY, the UNDER-SECRETARY OF STATE FOR AIR said that the present strength of officers in the R.A.F. Reserve of Officers represented a material increase upon the strength as at Jan. 1 last. There were 611 officer pilots in the Reserve, of whom 522 were in regular flying practice.

A NEW R.A.F. AERODROME.

In the House of Commons on May 28, in reply to SIR H. CAVENDISH-BENTINCK, the UNDER-SECRETARY OF STATE FOR AIR said that the aerodrome to be established near Odiham was for a squadron allotted for training and co-operation with Army units in the Aldershot Command and it was essential that it should be as close to Aldershot as possible. The former aerodrome at Chaltis Hill was 38 miles from Aldershot and therefore well outside the permissible radius.

LIEUT.-CMDR. KENWORTHY thought that aerodromes in the South of England would be absolutely useless in war time. THE SPEAKER: "That is a matter of opinion."

AIRSHIP RESEARCH.

In the House of Commons on June 9, in reply to a question by SIR F. SYKES, the SECRETARY OF STATE FOR AIR said:—"An Airworthiness of Airships Panel of the Aeronautical Research Committee was constituted in April, 1924, to consider certain technical questions affecting the airworthiness of airships; this panel reported in October, 1924. The only advisory board on airship development at present in existence is the Airships Co-ordinating Sub-Committee of the Aeronautical Research Committee, the composition and functions of which were announced in the Press on Mar. 30 last. One of the chief duties of this Committee is to consider and report to the Air Council on any design, research, and experimental questions that may be referred to them, whether arising at the Royal Airships' Works or in connection with the Airship Guarantee Company's contract, as, for example, the company's proposals for a new design of mooring mast. This Sub-Committee has considered a large amount of documentary evidence, and has so far held three meetings."

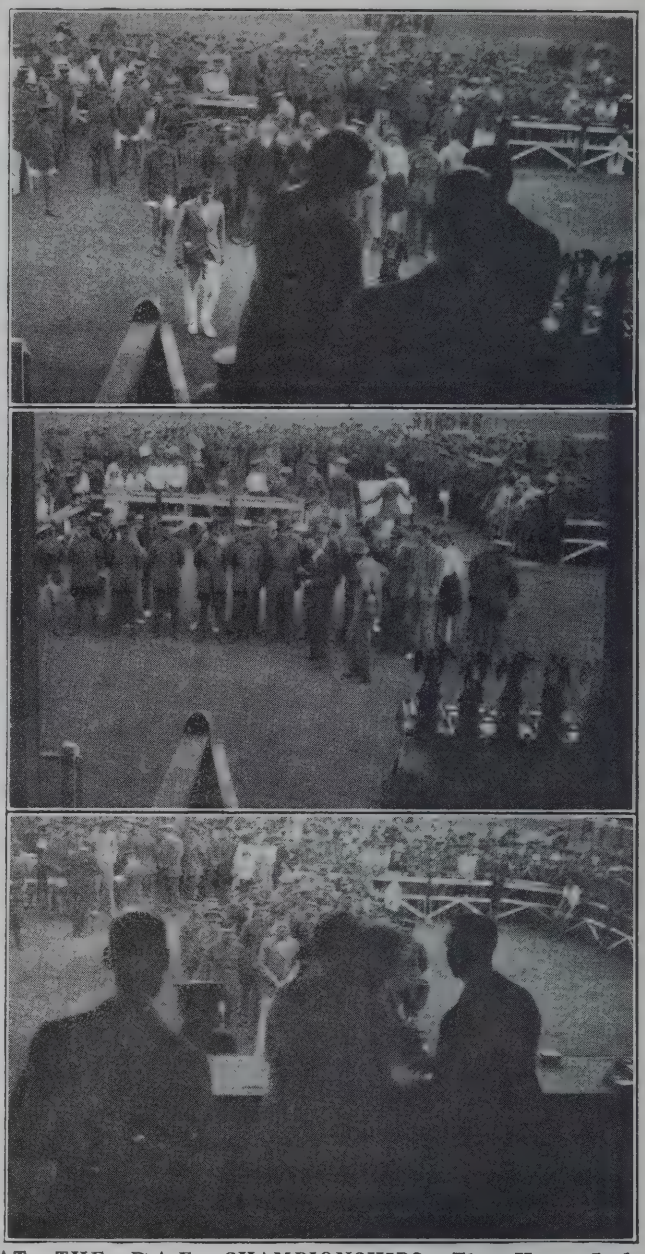
ENGINEERS IN THE R.A.F.

In the House of Commons on June 9, in reply to a question by DR. LITTLE, the SECRETARY OF STATE FOR AIR said that very great importance was attached to attracting University graduates, especially those who had studied engineering, to enter the R.A.F. Special advantages in the shape of "antedates of seniority" were given to those who did so. Officers were not accepted for employment solely on engineering duties, but after they had gained flying experience they might volunteer for specialisation as engineers. They were then available either for engineering or for general service appointments and had the opportunity to rise to the highest ranks in the Service. It was not considered desirable to divorce engineering from flying experience, as an officer could not properly maintain aircraft and engines on the ground unless he had extensive personal experience of their behaviour in the air.

THE FLEET AIR ARM.

In the House of Commons on June 10, replying to COMMANDER BELLAIRS, the FIRST LORD OF THE ADMIRALTY said that he was aware that the three strongest naval powers in the world other than our own gave their Admiralties complete control over the air arms of the fleet and air defences. The Admiralty were carefully watching the development of the system which was instituted by His Majesty's Government in 1923.

In the House of Commons on June 10, COMMANDER BELLAIRS called the attention of the First Lord of the Admiralty to the decision of the U.S. Navy Department that all midshipmen were to receive instruction in aviation, and suggested that similar air training should be given in this country. MR. BRIDGEMAN said that arrangements were already in force in His Majesty's Navy under which it would be compulsory in future for all executive officers to undergo a short course in elementary naval aeronautics in aircraft carriers during their service as midshipmen or in some cases as junior commissioned officers. It would also be optional for all existing commissioned officers of the Military Branch and Royal Marines under a certain age to volunteer for this course. [For the benefit of the uninformed it should be noted that the Military Branch of the Royal Navy corresponds to the General Duties Branch, R.A.F.]



AT THE R.A.F. CHAMPIONSHIPS.—The Hon. Lady Salmond, attended by Air Commodore Longcroft and Flying Officer Adams, presenting the trophies.

PARACHUTES.

In the House of Commons on June 15, MR. DALTON asked the Secretary of State for Air whether he is aware that Corporal Sydney Ronald Wilson, of No. 12 Sqdn., R.A.F., was killed on May 25 last, while engaged in a practice parachute jump from an aeroplane; that this was his first flight; and that the evidence at the inquest showed that, being unaccustomed to flying, he lost his nerve and failed to pull the cord; whether it is customary to require airmen to jump from an aeroplane during their first flight; and, if so, whether he will cause this custom to be discontinued?

THE UNDER-SECRETARY OF STATE FOR AIR (MAJOR SIR PHILLIP SASSOON): The answer to the first part of the question is in the affirmative, and I should like to express my very deep regret for the occurrence of this unfortunate accident. As regards the second part, it is not the case that it was Corporal Wilson's first flight. On the contrary, he had had previous air experience and had indeed qualified as an aerial gunner. It was, however, his first parachute jump from an aeroplane. As regards the third part the evidence at the inquest was to the effect stated, except that I am not aware that there was any evidence to suggest that this airman was unaccustomed to flying, a suggestion which, as I have already explained, is contrary to the facts. As regards the fourth and fifth parts of the question, no officer or airman would be allowed to carry out a practice parachute jump until he possessed considerable air experience, and it is clearly laid down in Regulations that such jumps are only to be made by volunteers.

THE ROYAL AERONAUTICAL SOCIETY.

An official notice from the Royal Aeronautical Society states that at a meeting of the Council held on June 8, Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C., was elected Chairman of Council for 1925-26.

It is also announced that a Memorial to those who lost their lives in the disaster to the R.38 (Z.R.2) has been placed in the Society's Library and will be unveiled by the American Ambassador on June 29 at 4 p.m.

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England to Sweden (and back)	2,450 miles
England to South Africa	6,281 miles
England to Australia	11,500 miles

These flights were accomplished without any change of engines en route

"The Britannia Trophy, presented by the Royal Aero Club for the best performance in the year, has been awarded for the year 1924 to Wing-Commander Goble and Flight-Lieutenant McIntyre for their flight round Australia in a Rolls-Royce-Fairey."

"Daily Telegraph," March 26th, 1925

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THE R.A.F. ATHLETIC CHAMPIONSHIPS.

The R.A.F. Athletic Championship Meeting was held at the R.A.F. Sports Ground, Uxbridge, on June 17, 18 and 20. The Referee was Air Commodore Longcroft, who is President of the R.A.F. Athletic Association, and Group Capt. Bourke, Chairman of the Association, was the Chief Judge.

On Saturday, the final day, the sports began with a march-past of the teams in the order of their achievement in the Championships of last year, headed by the R.A.F. Ensign carried by AC. Ferris, the Marathon Champion of Great Britain.

Apparently the reason why the R.A.F. March was not played during this parade was because it is practically impossible to march to it in spiked shoes.

An extremely interesting feature of the Sports this year was the scheme of colours worn by the various Teams. The scheme is so new that it has not yet been adopted by all stations. According to the programme recourse has been made to the science of Armoury in arranging the various colours and designs, and although heraldic terms have been used in describing some of the colours they must not be taken as heraldic.

The Uxbridge jersey is a good example of the scheme. It includes the collar (red for Inland Area Units and blue for Coastal Area Units) which indicates its service, as a Depôt, to fighting Units. The device which shows its function as the Recruits' Depôt is a black "*Jugum*" the arch of spears under which recruits were passed on being sworn in. Likewise Henlow, the Inland Area aircraft repair depôt, has a red collar and silver airscrew, and Shrewsbury, the mechanical transport repair depôt for both Inland and Coastal Areas, a red and blue collar and a black wheel.

Cranwell and Halton retain their original colours, pale blue and white stripes respectively.

The Squadrons have been allotted "*party per chevron*," the field of the jersey being "divided into two colours by a line running from the two ends of the base to the middle," the base being a line across the shoulders and the middle being the wearer's diaphragm, approximately. The chevron depicts the "V" formation.

The Sports scene-shifting, chiefly consisting of carrying hurdles about at the double, was performed very smartly by a small detachment of recruits from the Depôt in a uniform composed of dark blue shorts, white vests and service caps, putties and boots, not to mention neat little vaccination bandages.

The King's Challenge Cup, awarded to the Unit scoring the greatest number of points in the Open Competition, was won again by Cranwell with 49 points. Eastchurch and Halton tied for second place with 27 points, and Uxbridge and Henlow tied with 23 points. Netheravon and Manston scored 12 each and Flowerdown 9.

The Air Council Cup for the Unit scoring the greatest number of points in the Junior Competition was won by Digby with 41 points, Gosport scored 27, Calshot 21, Sealand 18, Hawkinge 17, Martlesham 13, Northolt 9, Farnborough 8, Duxford 7, Old Sarum and Kenley 5 each, Ruislip and Spittlegate 4 each, Shrewsbury and Biggin Hill 3 each, and Upavon 1.

It may be well to explain that Junior Teams are those from stations which have less than a certain number of officers and men. But Junior Stations may enter for the Open (or Senior) Championship events.

There were 64 entries for Putting-the-Shot, the eliminating trials for which took place on the second day of the Sports.

The Henlow team was disqualified in Heat 1 of the Mile Open Relay Race on the second day as one man was unlucky enough to drop his baton. There were 65 entries for the Long Jump and 65 for the High Jump, and in each case the six competitors with the best jumps competed in the finals of the third day of the Sports.

Another event which drew a big field was the One Mile Individual Championship, held by AC. Turner. AC. Turner won the race again on Wednesday in the very good time of 4 min. 40 1-5 sec. in spite of the fact that he had a nasty fall in the second lap and cut his arm.



THE HIGH JUMP CHAMPION.—Flying Officer Nuttall in the Air.

The results of the team events were :—

440 Yards Relay, Open: Cranwell (Cpl. Mottershead, AC.2. Freeman, L-AC. Fuller and AC. Grigg); Henlow; Eastchurch. 46 4-5sec.

440 Yards Relay, Junior: Digby (Flg. Off. Vines, Flg. Off. Newman, Cpl. Rapson and Cpl Arthur); Farnborough; Martlesham; 47 sec.

One Mile Relay, Open : Cranwell (Flg. Off. Firman, AC.2. Freeman, AC. Fuller and AC. Grigg); Halton; Eastchurch. 3 min. 40 4-5 sec.

One Mile Relay, Junior: Gosport (Flg. Off. Howlett, L-AC. Sheppard, L-AC. Goldie and L-AC. Powell); Digby; Sealand. 3 min. 44 3-5 sec.

Two Miles Relay, Open: Cranwell (Sjt. Ellis, Cpl. Sindell, AA. Thomas and L-AC. Fuller); Halton; Henlow. 8 min. 44 3-5 sec.

Two Miles Relay, Junior: Digby (Cpl. Tennicott, Plt. Off. Nicholls, AC.1. Jackson and Plt. Off. Vines); Gosport; Hawkinge. 8 min. 51 1-5 sec.

360 Yards Hurdles Relay, Open: Henlow (Flt. Lt. Scott, AC.1. Peachy and L-AC. Halls); Halton; Eastchurch. 54 3-5 sec.

360 Yards Hurdles Relay, Junior: Digby (Flg. Off. Newman, Plt. Off. Vines and AC.1. Knight); Hawkinge; Spittlegate. 51 2-5 sec.

One Mile Team, Open: Uxbridge (L-AC. Goodall, AC. Hester and AC. Ferris); Cranwell; Manston. Winner's time, 4 min. 47 sec. (L-AC. Goodall, Uxbridge).

One Mile Team, Junior: Calshot (6, 12 and 13); Sealand; Hawkinge. Winner's time, 4 min. 39 sec. (AC. Pugh, Northolt).

High Jump Team, Open: Cranwell, 15 ft. 9 in.; Halton, 15 ft. 8 in.; Uxbridge, 15 ft. 6 in.

High Jump Team, Junior: Digby, 10 ft. 7 in.; Kenley, 10 ft. 6 in.; Ruislip, 10 ft. 4 in.

Long Jump Team, Open: Cranwell, 58 ft. 7 in.; Uxbridge, 58 ft. 5½ in.

Long Jump Team, Junior: Northolt, 40 ft. 3½ in.; Duxford, 39 ft. 9 in.

Putting-the-Shot Team, Open: Cranwell, 96 ft. 9 in.; Eastchurch, 94 ft. 7¼ in.

Putting-the-Shot Team, Junior: Digby, 68 ft. 5 in.; Gosport, 62 ft. 9 in.

Tug-of-War, Open: Cranwell beat Flowerdown by two straight pulls.

Tug-of-War, Junior: Gosport beat Sealand by two straight pulls.



R.A.F. CHAMPIONS.—The Cranwell Team which won the Senior Tug-of-War.



"MOTH"

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27-60 H.P. CIRRUS ENGINE

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As a demonstration of the reliability of the "Moth" and its suitability for serious cross-country travel, on May 29th Mr. A. J. Cobham flew from London to Zurich and back in the day—1,000 miles in 14 hours.





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At the Royal Air Force Display, Hendon, June 27th, at least 27 de Havilland Aeroplanes will be engaged.

The results of the Individual Championships were as follows:—

100 *Yards:* Cpl. Mottershead (Cranwell); Cpl. Wale (Flowerdown); AC. Moffatt (Farnborough). 10 3-5 sec.

220 *Yards:* Cpl. Amos (Netheravon); Cpl. Mottershead (Cranwell); AC. Trower (Halton). 24 2-5 sec.

440 *Yards:* AC. Neale (Henlow); Plt. Off. Lord Bandon (Farnborough); Flg. Off. Howlett (Gosport). 55 1-5 sec.

880 *Yards:* AC Pugh (Northolt); Plt. Off. Russell-Stracey (Sealand); L-AC. Liddle (Henlow). 2 min. 5 4-5 sec.

One Mile: AC. Turner (Uxbridge); L-AC. Buxey (Worthydown); AA. Thomas (Cranwell). 4 min. 40 1-5 sec.

Three Miles: L-AC. Goodall (Uxbridge); L-AC. Caines (Manston); AC. Johnson (Lee-on-Solent). 15 min. 29 sec.

Two Miles' Walk: AC. Worrall (Uxbridge); AC. Golightly (Halton); AC. Stott (Sealand). 15 min. 0 4-5 sec.

120 *Yards Hurdles:* F-S. Fretwell (Hawkinge); Flt. Lt. Walmsley (Cranwell); Flt. Lt. Scott (Henlow). 16 2-5 sec.

High Jump: Flg. Off. Nuttall (Kenley), 5 ft. 10 in.; Flg. Off. Stephenson (Leuchars), 5 ft. 9 in.; AC. Gordon (Worthydown) and Plt. Off. Vines (Digby), level, 5 ft. 5 in.

Long Jump: Flg. Off. Hadley (Spittlegate) and Flg. Off. Frower (Northolt), tied, 21 ft. 8 in.; Cpl. Amos (Netheravon), 21 ft. 3 in.

Putting-the-Shot: Flg. Off. Sterling-Webb (Eastchurch), 35 ft. 10 in.; Cpl. Field (Digby), 35 ft. 4½ in.; Wing Cdr. Pattinson (Cranwell), 35 ft. 3¼ in.

The prizes were presented by The Hon. Lady Salmond, who afterwards accepted a bouquet from the Cranwell Team Captain.



THE R.A.F. CHAMPIONSHIPS.—Sir John Salmond, with Air Commodore Longcroft and Mr. Adams, inspecting the team captains.

R.A.F. SPORTS.

Polo.

Two teams from the R.A.F., Halton, took part in the Oxford University Open Tournament on May 26. In the first game Cheltenham beat Halton "B" by seven goals to three. Halton "B" team were: Sq. Ldr. F. Sowrey, No. 1, Flt. Lt. B. Ellwood, No. 2, Wing Cdr. W. Read, No. 3, Sq. Ldr. G. Williams, back.

Halton "A" team were defeated by Oxford "A" by two goals to one after a hard match. Halton "A" team were: Air Vice-Marshal Lambe, No. 1, Sq. Ldr. H. Hanmer, No. 2, the Rev. H. Beauchamp, No. 3, and Wing Cdr. N. Darnall, back.

Halton "A" beat Kirtlington by four goals to three in the final of the Junior Cup Tournament.

Digby Sports.

No. 2 F.T.S. Digby Athletic Sports were held at Digby Aerodrome on May 27.

The Individual Cup was won by Plt. Off. Vines, the Group Cup by the Flying Group and the Inter-Flight Cup by "B" Flight.

The winners of the various events were as follows:—100 yards flat (team): Plt. Off. Newman, Plt. Off. Vines, Cpl. Arthur. One mile flat (team): Sjt. Lowdell, AC. Jackson, AC. Hillen. 220 yards flat: Cpl. Rapson, Plt. Off. Vines, Cpl. Arthur. 880 yards (team): Sjt. Snaith, AC. Jackson, Plt. Off. Vines.

Long Jump (team): Plt. Off. Newman, Sjt. Snaith, Plt. Off. Vines (19 ft. 11 in.).

Three miles flat (team): Sjt. Lowdell, AC. Patterson, AC. Perry. 440 yards flat (team): Plt. Off. Vines, Sjt. Lowdell, Cpl. Rapson.

High Jump: Plt. Off. Vines (5 ft.). Sjts'. Handicap: Flt. Sjt. Milliard. Putting-the-Shot (teams): Cpl. Field, S.-M. Wilson, Capt. Mackay (33 ft.).

There were a number of other events for which the results are not available.

Henlow Sports.

The Annual Sports of the I.A.A.D., Henlow, were held at Henlow on June 3. The weather was perfect and the programme was carried out without a hitch. The R.A.F. Band from Duxford played during the afternoon. At the finish of the programme Mrs. U. J. D. Bourke presented the prizes.

The winners of the various events were as follows:—

100 yards: AC. Hall (10 1-5 secs.). Half-mile: AC. Liddle. 220 yards flat: AC. Thomas. One mile flat: AC. Robisnon. 440 yards flat: AC. Liddle. Three miles flat: A.C. Brown.

High Jump: AC. Petrie (5 ft. 3 in.). Long Jump: Flt. Lt. Scott. 120 yards hurdles: Flt. Lt. Scott.

Putting the Shot: Flt. Lt. Scott. Obstacle Race: AC. Hamment. 220 yards Sjts'. handicap: Flt. Sjt. Barber (1), Sjt. Johnlock (2), S.M. Goddard (3). Two miles' walking race: AC. Price. Band race: AC. Williams. Consolation race: AC. Neill.

Officers' wives (80 yards): Mrs. Parrett. N.C.O.s' and Airmen's wives' Egg and Spoon Race: Mrs. Petworth. Boys' Race: Master Felmeyham. Girls' Race: Miss Woolfington.

Officers' Race: Flg. Off. Walkington. Inter-Section Relay Race: E.R.S. "B." Tug-of-War: A.R.S. "A."

Victor Ludorum Cup: Flt. Lt. Scott.

Wise Challenge Cup: E.R.S.

R.A.F. Lawn Tennis.

The R.A.F. played Queen's Club on June 6, at Queen's, the match resulting in a win for the Club by 7 matches to 2.

Sq. Ldr. H. J. F. Hunter and Sq. Ldr. R. E. Saul lost to F. G. Lowe and D. M. Grieg 4—6, 1—6, beat M. Temple and C. Hargreaves 1—6, 6—3, 7—5, beat G. C. Watt and L. Darby 4—6, 7—5, 8—6.

Flt. Lt. J. Dunning and Flg. Off. C. F. Roupell lost to Lowe and Grieg 3—6, 1—6, lost to Temple and Hargreaves 4—6, 3—6, lost to Watt and Darby 6—4, 4—6, 2—6.

Sq. Ldr. Lindop and Sq. Ldr. N. F. Buckeridge lost to Lowe and Grieg 2—6, 4—6, lost to Temple and Hargreaves 3—6, 4—6, lost to Watt and Darby 3—6, 4—6.

Rifle Shooting at Sealand.

No. 5 F.T.S. Rifle Club held their 3rd Annual Rifle Meeting at Sealand Ranges on June 9 and 10 by kind permission of Wing Cdr. C. T. McClean, D.S.O., M.C., Commanding No. 5 F.T.S.

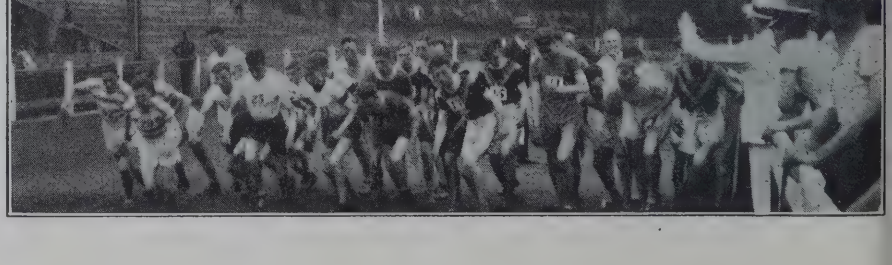
The Meeting was well supported, as there were nearly 70 individual entries.

A new feature was a competition for a Silver Cup open to all Units in the Western Command, the R.A.F., Sealand, and all Territorial Units in Flintshire and Cheshire. This proved a distinct success attracting 42 entries.

The Meeting was carried through without a hitch, thanks to the organisation of a hardworking committee. The standard of shooting was generally high, a good score being required to get into the prize list.

At the end of the Meeting Mrs. McClean very kindly presented the prizes.

Results:—Match 1.—200 yds. Delib.: (1) Flg. Off. Bertram, (2) Flg. Off. Woodyatt, (3) Flg. Off. McKenzie, (4) Flg. Off. Delamain, (5) Flg. Off. Gibbon. Match 2.—300 yds. Delib.: (1) Flg. Off. Greenslade, (2) Flg. Off. McKenzie, (3) Flg. Off. Woodyatt, (4) Flt. Lt. Hooper, (5) L-AC. Vickers.



AT THE R.A.F. ATHLETIC CHAMPIONSHIPS.—The Start for the One Mile Team Race—Open Championship.

BRITISH A.D.C. LIMITED AIRCRAFT

EXPERT OPINION.

Mr. Alan J. Cobham's opinion of the 27/60 h.p. "CIRRUS" engine is given in the letter reproduced below :—



Mr. Alan J. Cobham.

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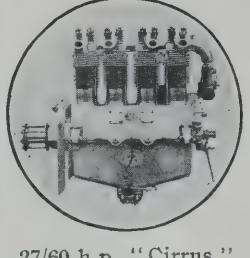
Dear Sirs,

The all essential to a pilots comfort and ease of mind, is absolute confidence in his engine.

When I flew the de Havilland MOTH with its 27-60 H.P. CIRRUS engine to Switzerland and back, over 1000 miles in one day, I had complete confidence that the CIRRUS engine would not fail me in any way.

I believe that the only light aeroplane engine that is suitable for the private owner is one that is perpetually reliable, simple to maintain and will give continual long running without overhaul. From my experience I think the CIRRUS engine comes up to this standard.

Yours very faithfully,
Alan J Cobham



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The first and only British Low Power Aero Engine to complete the Air Ministry 100 hours type test.

This Engine has been approved and adopted for supply in connection with the Air Ministry Light Aeroplane Club Scheme.

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Match 3.—300 yds. Snap: (1) Plt. Off. Giveen, (2) L-AC. Pearce, (3) Sjt. Jaggard, (4) L-AC. Slade, (5) Flg. Off. Bertram.
Match 4.—300 yds. Rapid: (1) AC. Hands, (2) Sjt. King, (3) Flg. Off. Woodyatt, (4) L-AC. Vickers, (5) Flt. Lt. Hooper.
Match 5.—500 yds. Delib.: (1) Flg. Off. Delamain, (2) Sjt. King, (3) L-AC. Gooding, (4) S-M. Loughead, (5) Flg. Off. Cordes. Match 6.—600 yds. Delib.: (1) Flg. Off. Delamain, (2) Plt. Off. Williams, (3) L-AC. Pearce, (4) L-AC. Gooding, (5) Flg. Off. Woodyatt.
Match 7.—Grand Aggregate: (1) Flg. Off. Woodyatt, (2) Sjt. King, (3) L-AC. Pearce, (4) Sjt. Jaggard, (5) Flg. Off. Bertram (6-13), L-AC. Slade, Flt. Lt. Hooper, Plt. Off. Giveen, Flg. Off. Delamain, Plt. Off. Heather, Plt. Off. Rowland, Plt. Off. Barringer, F-S. Sparkes.
Match 8.—Donegal Badge: Flg. Off. Delamain.
Match 9.—"Tyro": (1) L-AC. Drewitt, (2) AC. Fillingham, (3) Plt. Off. Blomfield, (4) AC. Gideon, (5) Plt. Off. Van der Beek, (6) AC. Lockwood.
Match 10.—Open Championship: (1) Silver Cup, Flg. Off. Greenslade, R.A.F.; (2) Silver Medal, Lt. Dean, Cheshire Regt.; (3) Bronze Medal, Sjt. O'Brien, Royal Welsh Fusiliers.
Match 11.—Inter-Squadron Challenge Cup: Winners, No. 2 Sqdn.
Match 12.—Senior Officers' Cup: (1) Sq. Ldr. McCrae, (2) Sq. Ldr. Bowman.
Pool Winners: Flg. Off. Holland, Plt. Off. Van der Beek. Sweepstake Winners: Flg. Off. Delamain, Sjt. King, Sjt. O'Brien.

Manston Sports.

The Annual Athletic Sports of the R.A.F. Station, Manston, were held on June 11. The performances were well up to the average and the last event was run off within a minute of the scheduled time. The station was divided into four Units for the purposes of the Sports, No. 2 Sqdn., No. 9 Sqdn., H.Q. School of T.T., and No. 1 Section School of T.T.

In the absence of Mrs. Hebden the prizes were presented by Mrs. Guilfoyle.

The winners of the various events were as follows:—
Inter-Unit Cup: No. 1 Section S. of T.T., 69 points.
Victor Ludorum Cup: L-AC. Cains.

100 yards: AC.2. Pape (10 4-5 secs.). 220 yards: Cpl. Hayes (65 1-5 secs.). 440 yards: L-AC. Cains (58 secs.). 880 yards: L-AC. Cains (2 mins. 7 secs.). Three miles: L-AC. Cains (16 mins. 55.9 secs.). Two miles' walk: AC.2. Sanderson (18 mins. 7 secs.).
120 yards hurdles: Cpl. Jeffrey (18 2-3 secs). Putting the Shot: Flg. Off. Chichester (33 ft. 4 in.). High Jump: AC.1. Clarke (5 ft. 1 in.). Long Jump: AC.2. Barnes (19 ft. 10 in.).
One mile team and individual: Team, No. 1 Section; Individual, L-AC. Cains.
One mile relay team: No. 1 Section. 440 yards relay: No. 1 Section. 360 yards hurdles: No. 1 Section.
Inter-Section Tug-of-War: H.Q. Section. Sack Race: Cpl. Filkins. Pillow Fight: AC.2. House. Serjeants' Race: S-M. Reddock. Officers' Race: Flt. Lt. Anne.
Open Half-mile: AC.1. Morgan (Hawkinge) (2 mins. 12 secs.). Tug-of-War, Open: Margate Police. Flag Hoisting Race: H.Q. Section. Obstacle Race: AC. Parrott. Throwing the Cricket Ball: AC. House (79 yds. 1 ft.). Band Race: L-AC. Mills.



At the R.A.F. Athletic Championships.—The One Mile Team Race, Open Championship, in progress. Nos. 25, 26, and 27, who are leading, are of the Manston Team. On the left is a Henlow man.

The North Pole Expedition.

On May 21 Capt. Roald Amundsen left King's Bay, Spitzbergen, in an attempt to reach the North Pole by air. The expedition consisted of two Dornier Wal flying boats (two Rolls-Royce Eagle engines each), the crews being, in the first boat (N. 25), Capt. Amundsen (navigator), Lieut. Kiiser-Larsen (pilot), and Carl Feucht (mechanic), and in the second boat (N. 24), Mr. L. Ellsworth (navigator), Lieut. L. Dietrichsen (pilot), and Lieut. O. Omdal (mechanic).

The departure was made at 17.00 hours and after flying over fog until 20.00 hours it was discovered that the direct course had been lost and that the boats were too far west. The course was changed, but at 01.00 hours on the 22nd after half the petrol had been consumed a landing was made in an ice lane. Immediately after landing both machines became frozen in. Observations taken showed their position to be Lat. 88 deg. N. Long 10.20 deg. W., or roughly 136 miles short of the Pole.

In the eight hours' flight the two machines had covered 621 miles at an average speed of 93 m.p.h. By soundings and observations taken it was confirmed that the area between Norway and the Pole so far as the expedition had proceeded was one large expanse of water or ice.

For three weeks the expedition was frozen in. It was decided that to proceed further north without the likelihood of finding a suitable landing-place to take observations and soundings would be taking an unnecessary risk, so that it was agreed to return over a course further east so as to cross hitherto undiscovered tracts.

Efforts were made to free N.25 and with the aid of an axe, an ice anchor and a knife tied to a ski-ing stick the boat was eventually freed and towed on to an ice floe. The combined efforts of six men working for 24 days were necessary to free the boat and prepare a suitable tract of ice for the take-off and time after time the screwing of the ice pack and the formation of new ice rendered their work abortive.

After reducing their load to the limit an attempt was made to get off on June 15 with the one boat (N. 25) with the six men on board. They taxied the whole length of their runway, jumped a 6 ft. ice lane and took the last jump from the following floe, thus getting into the air.

After 8 hrs. 35 mins. flying they reached North Cape, North-East Land. Thence they were taken off by a Norwegian whaler and conveyed to King's Bay. An attempt was made to tow the N. 25, but owing to a freshening gale it was tied up to the land ice.

On June 20 the *Heimdal*, one of Capt. Amundsen's vessels, left King's Bay with the two pilots and mechanics to fly the N. 25 back to King's Bay.

During the flight the expedition observed an area of 160,000 square kilometres of a hitherto unexplored section of the Norwegian Polar Regions and exposed over 600 photographic films.

Concerning the Rolls-Royce engines used, Capt. Amundsen says in his message to the *Central News*:—

"The Rolls-Royce engines in the first few hours secured our confidence, and not once during the later flight, without the possibility of landing, did we feel the slightest anxiety.

"During our stay north the engines always started instantaneously, and saved the 'plane when we were compelled to move it away from the threatening pack ice."

Although Capt. Amundsen failed to reach his goal, his achievement is an example of courage. In the opinion of Polar explorers the value of the expedition from a scientific point of view is considerable, and his achievement has provoked much admiration.

The performance of the seaplanes is noteworthy, and the fact that the Rolls-Royce engines behaved as one has now come to expect them to behave is additionally satisfactory.

Describing the start for the South on June 15 Capt. Amundsen remarks: "*We were so confident in the engines that we considered ourselves home already.*"



ALL ABROAD.—Training machines for the Spanish Royal Naval Air Service. A batch of 504K Avros supplied by the Aircraft Disposal Co. Ltd. Captain Cortijo of the Spanish Royal Naval Commission and Major D. Stewart, Sales Manager of the Aircraft Disposal Co. Ltd., can be seen standing by the machines.

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HOLDERS OF THE BRITISH SPEED RECORD, 212.2 M.P.H.
RECORD CLIMB OF 19,500 FT. IN 11 MINS. 34 SECS.

(Machine in each of above events fitted with Napier Lion engine.)

Illustrated Catalogue on application.

The Italian Visit.

On Tuesday, June 16, a flight of four Italian Air Service machines arrived in this country on a visit of courtesy, said to be a repayment of a visit made to Italy by R.A.F. units. (Apparently this refers to certain calls at Italian ports made by R.A.F. aircraft from the Malta base. Also the visit paid by Sir Samuel Hoare and Mr. Amery to the Headquarters of the Regia Aeronautica may be the basis of the courtesy.

The flight was led by Capt. Ferrarin, and with him were Capt. Brack-Papa, Capt. Casinelli, and Lt. Ganna. Lt. Bertolini and six mechanics also accompanied the flight. The machines were Fiat B.R.1 bombers or torpedo-carriers, and are described elsewhere.

The flight had previously visited Paris and Brussels. They left Brussels on Tuesday at 11 o'clock, and arrived at Croydon at a few minutes past mid-day, where they were welcomed by Major Scaroni, the Italian Air Attaché in London, and a number of members of the Italian colony in London. After a formal visit to the Customs House, and some light refreshments at the Trust House, the visitors, escorted by three Grebes led by Flt. Lt. Vincent, left for Kenley, where they were received by Air Commodore Samson, D.S.O., A.F.C.

The Ford Air Line.

Sundry figures have appeared in the American Press regarding the cost of operating the Ford Air Line between Dearborn and Chicago. One is warned that these figures are not authentic but are merely a first estimate of costs and do not include certain terminal charges and the cost of engine maintenance and of delivery at terminals.

The really important thing about this first Ford Air Line is that it has run for nearly two months without a forced landing owing to engine trouble. The regularity has surprised everyone who has been working with the line. The load carried also has been rather surprising. The actual "pay load" has only been about 1,000 lbs. per trip but in addition the Stout Metal Airplane has always carried 30 gallons of extra fuel and an extra mechanic with two boxes of equipment weighing 200 lbs. more, so that the actual useful load has been approximately 1,500 lbs.

The average time in either direction each day has been about 2 hours and 35 minutes, which puts the cruising speed of the Stout ship at close on 100 miles an hour with the Liberty engine running at 1,500 r.p.m., its maximum revs. being 1,650.

Nearly all the trips have been made with one ship, the second one being held in reserve. The idea in this has been to get the maximum number of flying hours out of one machine in as short a time as possible so as to learn all that can be learned about the behaviour of all-metal aeroplanes under constant use.

The management hopes very shortly to run this machine on two round trips a day instead of the one, making 11 hours per day in the air per ship. Not only will this reduce the present low cost of maintenance but it will also provide data as to the wear of working parts and the effect of vibration on all-metal structure. The writer to whom one is indebted for this information says "We have had no mechanical trouble of any kind with the ship and only usual plumbing difficulties with the power installation."



Major Brackley inspects a visitor. The photograph gives a good idea of the size of the 700 h.p. Fiat engine in the B.R.1 bombers.



The Fiat B.R.1 torpedo and bomb carrier. This type is the mount of the flight which visited England last week. It is fully described on another page.


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ENGINEERS, EDITORS, SCIENTISTS, AND STAFF OFFICERS.

An article on Engineers and Scientists in the R.A.F., which recently appeared in this paper raises a number of questions, some of which cover a rather wider field than the author of that article—and a number of others—seems to realise.

One of these which arises at once is that concerning the meaning of the terms Engineer and Scientist. The author of the article seems to be a little hazy on the subject. By bracketing the two classes together in his title he suggests a somewhat high interpretation of the term engineer, but the article itself seems to indicate that to him any reasonably able mechanic is an engineer, and anyone who is not scared of little d's and long s's is a scientist.

Thus, as not infrequently happens, one who prides himself on the grammatical precision of his use of words is found to be using these words with a very vague idea of what they may imply.

What is an Engineer?

What is an engineer? If the derivation of the word is any guide, the word means merely an ingenious person. To one who claims to be an engineer this simple meaning of the word has much to commend it. Modern usage has limited the application of the term to those who apply their ingenuity to the mechanical arts, and in this country at least has permitted it to be applied to all those who are concerned with those arts in any capacity whatsoever.

Thus it happens that the gentleman who scales castings in a foundry yard, the local plumber, the garage odd job man, the charge hand of a power plant—whether it be a 5 h.p. country-house lighting set or a 250,000 k.w. bulk supply station—are by common consent grouped under the description of engineer. Moreover, there is no other title by which one can distinguish from this general class of operative mechanics the type of constructive and designing engineers to whose ingenious and inventive minds the former classes owe their means of existence.

The designer of the Forth Bridge was called an engineer and so is the man who replaces a defective rivet on that great work, and to a large number of people the common designation seems adequate.

Confusion between scientists and engineers is scarcely more excusable than this vagueness as to the scope and variety of occupation commonly lumped together as engineering—particularly on the part of a professional worker in words. Scientist means one who knows, an engineer must be one who uses knowledge. The term scientist now tends to be confined rather to those who are engaged in extending or acquiring knowledge than to those who merely possess it. Some scientists are also engineers, some engineers are also scientists, but the two rôles are distinct. The engineer must possess knowledge, but he need not have originated it.

What Need has the R.A.F. of Engineers?

Before discussing how the R.A.F. should be provided with engineers it is well to consider for what purpose that Service needs engineers, and consequently what kind of engineers it needs.

The text of the article already mentioned refers to Sir Hugh Trenchard's hope that in five or ten years' time every flying officer will know enough about his aeroplane and engine to keep it in order without calling in the aid of specialist mechanical officers. Obviously someone or another in the R.A.F. must be responsible for the mechanical condition of aeroplanes and engines.

But purely as a piece of mechanism an aeroplane is not a more complex affair than is a motor car, and it requires no higher mental attributes and no greater degree of mechanical skill to keep in first-class condition than does a car. There is one difference. It is not essential that a car should always be in first-class condition throughout, whereas it is essential that an aeroplane should be kept in as nearly perfect condition as possible.

Thanks to the relative indifference of the modern car to minor—and in some cases even to major—mechanical defects and mal-adjustments, motorists tolerate a standard of mechanical incapacity and of careless and slovenly workmanship on the part of garage mechanics which could not be tolerated on that of aeroplane mechanics. Nevertheless the man who can keep a motor-car in really first-class condition is mentally and manually capable of looking after an aeroplane satisfactorily.

If the R.A.F. needs no more in the way of an engineering staff than is required for such machine maintenance there is no reason on earth why it should not train its flying officers to supervise this work. It should be within the mental capacity of any reasonably intelligent officer, and the degree of manual dexterity needed could be acquired by nearly anyone.

Mechanics and Engineering.

But in fact the R.A.F. has need of engineering talent for many higher duties than these of routine maintenance work. The flying officer is served out with a standard type of aeroplane which has been chosen by some higher authority as suitable for the work of the unit to which the officer is attached. If he is required to maintain that aeroplane at some definite standard of sound mechanical condition he is only being required to do in his own sphere work precisely analogous to that required of the infantryman, who is required to keep his Service rifle at the prevailing standard of cleanliness and good order. He is no more necessarily required to be able to assess the merits of his aeroplane *qua* aeroplane than the infantryman is expected to be an authority on the design of small arms.

But just as there must be some body in the Army which must decide upon the particular type of rifle to be adopted as a standard, so in the R.A.F. there must be some body to decide upon types of aeroplanes to be put into service.

Neither in the case of the rifle nor of the aeroplane can such decisions be based safely on the purely mechanical virtues of one or another type, but it is obvious that engineering considerations involving the design, construction and maintenance of the types are of very great importance. And any body which has to make decisions of this class requires to be fully informed on these subjects. It can obtain the necessary information only from competent engineers informed of all the factors in the case

A Garage Simile.

A garage mechanic to whom you take your car should be able to inform you accurately as to what parts thereof are worn, broken, or out of adjustment, and should be able to replace, repair, or readjust these parts, so that the car is in satisfactory working order. When he has done so, however, the car will not be a better car than it was when new.

The same mechanic may be able to tell you what alterations in the original design and construction would make it a better car—less liable to break, wear or lose tune in service—without sacrifice of its other good qualities. If he does so, however, he is going beyond the purely mechanic's function and is exercising some of that ingenuity which is the essence of engineering.

He may even be able to go further and show how a practical car embodying those improvements could be built, produce drawings therefor, and discuss intelligently with the manager of a workshop the actual processes and costs of production of such an improved vehicle. He could then be regarded as having passed still higher up the scale of engineering competence.

The direct experience of existing cars in service which such a man must have as a mechanic is obviously an advantage to him if he essays to extend his activities from purely mechanical to designing and inventive work. But mere ability as a mechanic is no certain index of the mental capacity to undertake such higher functions. Any observant fool can say such a machine is a rotten one—such a component is continually failing and ought to be strengthened. It needs a higher order of intelligence and a wider experience to decide on how best the defective component may be strengthened effectively and whether an alteration to that end will not bring in its train other troubles of a more serious nature.

There is room for a good deal of criticism of the way in which the purely mechanical maintenance of aircraft and engines in the R.A.F. is carried out. The standard in this respect varies widely from unit to unit—largely in accord with the mental attitude of individual commanding officers—but the average is lower than it should be. There are distinct signs of improvement in this respect, and every reason to expect that improvement will continue.

Engineering Staff Work.

It is in regard of what may be called engineering staff work that the R.A.F. seems to lack any organisation for the training of officers. It is unfortunate that so large a proportion of those who in military circles are regarded as competent staff officers should have been brought up to look upon engineering as purely a question of mechanics. It is always difficult for a specialist in one branch of human activity to appreciate the qualities of another specialist in a somewhat different line of business, and it is not perhaps surprising that so few military officers realise that many engineering undertakings have to face problems of a nature very closely akin to many of those involved in the organisation of a military force either in peace or at war.

In a recent article it was suggested that certain definite engineering considerations must be taken into account in determining the general supply policy of the R.A.F., and consequently that these considerations had a direct bearing on the more purely military policy of that Service. If this is so—and there is little room for doubt on the subject—there should be certain high officers of the R.A.F. capable of giving reliable advice on such questions to the C.A.S., and in

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fact there ought to be at least one engineer member of the Air Staff quite independent of the Directorate of Supply.

Between the flying officer-mechanician (or engineer apprentice) and an Air Vice-Marshal (E) on the Staff there is a wide gulf fixed, and the question whether the R.A.F. can or cannot provide itself with a Service Corps of Engineers is really one of whether it can provide in the Service itself the training which will turn the one into the other. It is extremely difficult to see how the R.A.F. can do this. The difficulty is not confined to the R.A.F. It exists and has not been overcome in both Navy and Army.

Why the Services cannot produce Staff Engineers.

By far the greatest part of the engineering work which has to be undertaken in a military service is—as it is in the industrial world—of a purely mechanical or operational nature. A naval engineer officer, for instance, knows that he may look forward to spending by far the greater part of his working life in running or in supervising the running of the machinery of one of a limited number of H.M. ships. Until he reaches some such exalted rank as that of Captain—a rank which very few engineer officers ever do reach—he cannot look for any permanent escape from this type of duty unless he resigns his commission—and with it his prospect of a career in the Navy—and seeks a civilian job.

In other words he has little to look forward to in the way of professional experience that is not more or less on a par with the routine work of a power station shift engineer, who may in time rise to be station superintendent.

But the civilian power station engineer is at least working for a commercial undertaking to whom cost is a primary concern, and he is rarely left long in ignorance of that fact. If he happens to be an intelligent young man he soon realises that cost rather than purely physical and technical possibility is the factor which ultimately decides what may or may not be done with success.

If in addition he happens to be an ambitious young man he will not be content with discharging the routine duties of running his plant in a mechanically satisfactory manner, but will start considering how the cost of running that plant is made up—and will then discover many things by no means obvious.

He will realise that his power station is but one part of an organisation, and power station costs but one part of the cost of supplying power, and he may—when he feels that he has grasped both the technics and the economics of the power station—seek experience in another branch, say the distribution department, of the same or a similar undertaking. Later he may move to a firm manufacturing power plant, or become a junior on the staff of the consulting engineers to a power supply company.

Thus as quite a young man he may acquire experience covering the whole or a large part of the whole business of power supply from the design and manufacture of the plant to the actual operation of it. And he can do this more or less at his own free will, in accordance with what he knows of his own aptitudes, and without at any time feeling that in leaving one job for another he is sacrificing his past training or his future prospects.

Of course a very small proportion only of young engineers display the initiative and enterprise necessary to gain an extended experience in this way. Equally not all those who have the initiative and enterprise have all the other qualities making for success. But those who have the necessary qualities have the opportunities and these opportunities do not—can scarcely—occur in a military service.

Even if it were possible to devise methods for giving to Service engineers opportunities for the widest possible scope for individual enterprise and initiative it is difficult to see quite how the influence which considerations of cost exercise over the engineer in civilian work can be reproduced within a military service.

The Importance of Cost in War.

It is often said that in war—which is the end for which all military services are organised—cost cannot be considered—or is at least a secondary consideration. This statement is untrue. All that is true in it is that cost in war cannot be reckoned in money, but must be expressed in units of a more stable and fundamental kind.

Cost is really a measure of the difficulty of getting a given thing done. The man who can estimate accurately the money cost of a given job of work must before he can give his estimate in pounds shillings and pence have formed a correct idea of how much labour and how much material will be needed, of whether the labour and the materials are available at the place where they are needed, and if not what transport and other facilities must be provided to get them there and keep them there until the work has been completed. This is the real cost and the money version is merely the real cost converted into exchange units.

Once this is realised it will be seen that any military service is vitally concerned with costs. The practicability of a given military operation must be judged on the basis of whether the man-power essential for its success can be spared, whether the conveyance of that man-power to the required spot can be effected in time, and whether the necessary transport, munitions and supplies are available or can be procured without weakening the general military position to an unduly dangerous extent. In other words, will the proposed operation cost too much to be worth while?

It is not only in definitely warlike operations that cost must enter into military calculations. If a given policy in regard to the production of aircraft in war time calls for the employment of a body of labour, of manufacturing facilities, and for a supply of material which the nation cannot allocate to aircraft production without disastrous weakening of certain other activities necessary for the national safety, that particular policy is too costly to be adopted.

Now it is the engineer—the right kind of engineer of course—who can most easily tell the Air Staff what a given programme of construction will cost—either in money units for the purpose of peaceful Budgetting or in the more vital units of men and material in war time. It is precisely this kind of engineer that the services cannot—so far—produce for themselves, and therefore in practice they have to rely upon civilian assistance—often at very second-hand—to guide them in forming their policy.

Where the External Expert Fails, and Why.

In practice external expert assistance in matters of this kind is not altogether satisfactory. The non-service engineer—however competent in his own line—may always overlook considerations peculiar to the Service which are so obvious to those in the Service that it does not occur to them to mention them explicitly.

This difficulty is often exaggerated by the reluctance shown by military officers to take non-Service advisers into their confidence as completely as may be necessary to a proper understanding of the whole case. To a large extent this is the result of the limited range of experience open to service engineers in the ordinary course of events. The average military officer judges engineers by the use which the Service ordinarily makes of them, and fails to realise that many engineers are more than glorified mechanics. Hence it seems to be held that it is not merely a waste of time to put before an engineer a question of policy—but that it savours of the indelicate to allow him to suppose policy to be a matter open to discussion.

Although a geologist is scarcely an engineer, it would not be surprising to find that the incident which is alleged in the article which instigated this one to have led to the dissolution of the *Kriegs Geologik Korps* was really due to lack of frankness on the part of the High Command towards its technical advisers.

Geological strata do not lie on plane or geometrically describable surfaces, but may be kinked in a most erratic manner. Definitely water-bearing strata are often encased above and below by others impermeable to water. In this case the free water level—that is the height to which the water in a water-bearing stratum will rise in a borehole which penetrates it—is fairly uniform over a large area—it is roughly a measure of the greatest height attained by that stratum in the vicinity and can be foretold with good accuracy in any locality which has been adequately surveyed. If the free water level is, say, 50 ft. below surface, there is always a danger that any work below that level may be flooded, but if there is a kink in the strata another 50 ft. deep you may have to go down 100 ft. before you reach the water. Then, but not before then, the water will rise in the shaft to the 50 ft. level. Over that kink you could go to 95 ft. without flooding, but if you venture another 5 ft. you will be submerged.

What the High Command said to the unfortunate geologists was probably something like this: "What is the greatest depth to which we may mine with the certainty that we shall not be flooded?" And the correct answer to that question is the free water level of the district, which the geologists probably gave with good accuracy.

If the High Command had disclosed what they really wanted to know the geologists could not have given them a definite safe depth in feet or metres, but they could have told the Staff: (1) That above free water level there was no risk of flooding, and (2) that if they could find a kink in the impermeable stratum above the water-bearing layer which went below free water level they might safely follow that kink down. So long as they did not pierce the waterproof layer they would be safe, but if they did pierce it below the water level their workings would inevitably be flooded.

Experience indicates that a truthful answer of this kind which necessarily lacks that precision so dear to military minds is rarely welcomed by senior officers. But after all it is a little hard that the poor geologist should be punished because the Almighty has not laid out the earth just as the Staff could have wished it.—W. H. S.

THE INSTITUTION OF AERONAUTICAL ENGINEERS.

At the Extraordinary General Meeting of the Institution f Aeronautical Engineers held on Wednesday, June 10, the roposal—already approved by the Royal Aeronautical ociety—that the Institution be amalgamated with the .Ae.S. was defeated by a majority of two to one.

The Extraordinary Meeting was preceded by the Annual eneral Meeting, at which the Balance-sheet and Chairman's eport for the year were presented. These disclosed the fact hat the Institution was in a by no means unhealthy posiion in many ways. Despite the fact that members coninually in arrears in subscription had been struck off the roll, he membership was well maintained. The publication of the Minutes of Proceedings, which included the papers read at the neetings, although it involved a substantial cost, brought in revenue from advertisements and sales covering nearly o per cent. of the cost, and the demand for the Minutes was ncreasing rapidly. Moreover, at Dec. 31 the Institution ossessed a credit balance of over £120, so that on the face of t the Institution would appear to be well on the way to ermanent success.

The fly in the ointment was the fact that the Institution as in the past been very generously supported by the Society f Motor Manufacturers and Traders, and that this body had ignified its inability to continue to support the Institution. Vithout the 1924 contribution from the S.M.M.T. there would ave been a deficit on the year's working of approximately £140 and had both this and previous donations from the same ource been wanting, the total deficit at Dec. 31, 1924, would ave been nearly £300.

Under the circumstances the Institution had either to find n extra revenue of £150 to £200 p.a. from amongst its own nembers, or to cease to function in its present form. The ouncil were doubtful as to the possibility of raising this xtra sum by raising the subscriptions, and recommended he proposed amalgamation with the Aeronautical Society s the most satisfactory way out of the difficulty.

In the discussion which followed the formal moving of this roposal with very few exceptions the speakers deplored he possibility of the Institution disappearing as a separate ntity, and the only support forthcoming was on the practical round that the possibility that members of the Institution ight so influence the Royal Aeronautical Society as to ender it an efficient substitute for the Institution was prerable to the probability that the Institution should sink ithout trace.

The feeling of the majority however was that the amalgamation would be in every way fatal to the aims and objects of the Institution and should be opposed at all costs, and amongst the most determined upholders of this view were certain persons who are actually members of both bodies.

The extremely curious behaviour of the Royal Aeronautical Society in this matter undoubtedly strengthened the opposition. This consisted firstly in publishing an announcement as to the negotiations while the matter was still under discussion between the two Councils, and while they were still regarded by the Council of the Institution as in the confidential stage, and secondly in communicating directly with the Secretary of the Australian Branch of the I.Ae.E., not only without informing the I.Ae.E of that communication, but even before the Council of the I.Ae.E had notified its members officially that these negotiations were in progress.

Thus the Council of the Institution have now to discover ways and means of raising that extra revenue which is essential to their continued existence. It may be pointed out that the proposed amalgamation would in any event have called for increased subscriptions from the present members of the Institution who do not already belong to the R.Ae.S. and that the Institution will be able to continue if its members will pay to it an average subscription somewhat less than that which they would have had to pay to the amalgamated Society. On the other hand, if the membership falls off largely as a result of increased subscriptions the Institution's difficulties will not be met, whereas the amalgamation could not but have increased the revenue of the R.Ae.S.

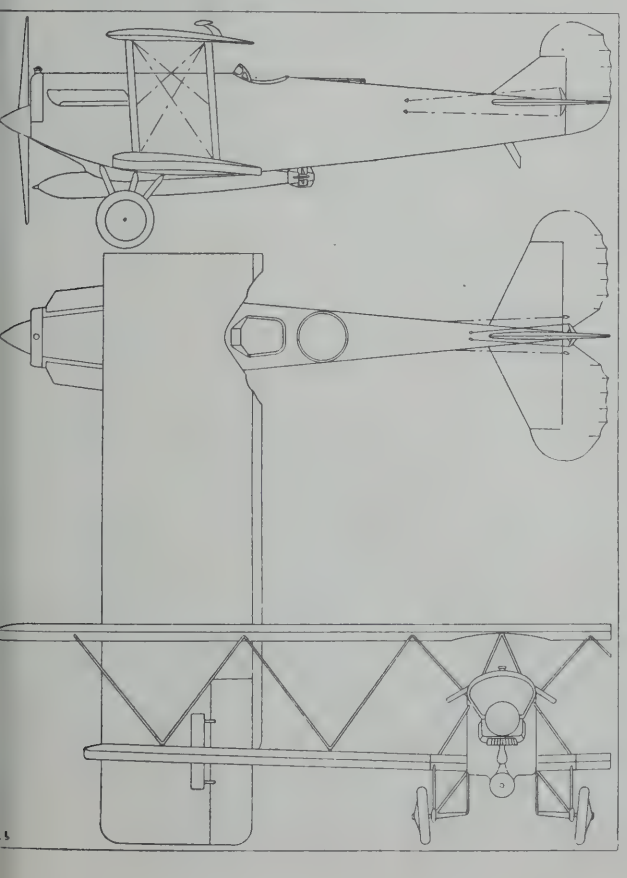
The general sense of the meeting was strongly in favour of the increased subscription and therefore it may be hoped that the majority of the members will actually meet the demand which will now have to be made on their pockets.

The Royal Aeronautical Society has no one but itself to blame for the rebuff which has been administered to it. Had the Society taken the opportunities which lay before it at the end of the war the Institution need never have been founded. Had the R.Ae.S. recognised when the Institution was formed that that body was undertaking work which it had itself neglected and was in fact a complementary body with which it could well have worked in harmony, both Institutions would now have been in a stronger position.

And had the R.Ae.S. betrayed less of petty jealousy and a more worthy sense of the dignity of its very privileged position a movement for a working agreement which would have eased the financial difficulties of both bodies could have been negotiated with much less difficulty.—W. H. S.

THE FIAT B.R.1.

The Fiat B.R.1 machines of the flight of the Royal Italian ir Service, which has just paid an official visit to this country, are the direct descendants of the original Fiat B.R. which was produced at the end of the War. The original B.R. was a high performance fighter bomber with the 700 h.p. Fiat engine.



The new version originated in 1923 with the incorporation in the older type of a few improvements suggested by service experience with the type, but it was later decided to increase the range of usefulness of the machine by fitting it with a divided undercarriage and arranging it so that it could carry either the largest of bombs or a torpedo.

The only noticeable changes other than that to the undercarriage consist in the adoption of a rigid diagonal truss bracing over the whole span instead of the rigid bracing in the inner and wire bracing in the outer bays in the original, an increase in span of about 2 m., and in the provision of a slight stagger to improve the pilot's view downwards.

The machine is of mixed steel and timber construction. The fuselage is of the three-ply covered type, rectangular in section. The wings are fabric-covered, apparently with wooden spars and ribs, and are fitted with top plane ailerons balanced by a small auxiliary surface carried above the wing.

The undercarriage and wing-bracing is of steel, mostly oval section tubing, welded joints being largely used throughout.

Both pilot's and gunner's seats are behind the wings, and the cockpits are specially roomy.

The B.R.1 is noticeably clean in detail, there being practically no odd fittings sticking out in the wind. Bombs or torpedoes are recessed into the bottom of the body with the suspension gear inside. The machines which visited England certainly created a very good impression as regards their manœuvrability, take-off, and angle of climb, even allowing for their unladen condition.

SPECIFICATION.

Span ... 17.3 m. (57 ft. 8 in.)	Wing loading ... 51 kg./m.² (10.3 lbs./sq. ft.)
Length 10.47 m. (34 ft. 11 in.)	Power loading 3.6 kg./h.p. (12.2 lbs./h.p.)
Height 3.91 m. (13ft.)	Max. Speed 245 km.h. (153 m.p.h.)
Wing area 77 m.² (830 sq. ft.)	Climb to 3,000 m. (9,840 ft.) 16 m. 45 s.
Weight empty ... 2,400 kg. (5,286 lbs.)	Ceiling 5,000 m. (16,140 ft.)
Weight loaded 3,900 kg. (8,590 lbs.)	Endurance 4 hours
Engine 700 h.p. Fiat	



THE NEW AIR LINER.—The De Havilland 54 (Rolls-Royce Condor III) which, in its tests at Stag Lane this week, shows signs of being one of the best and safest commercial machines yet produced. The fast landing and taking-off qualities of the D.H.34 have been eliminated from this new machine, which gets off after a short run and lands extremely slowly.

COMMERCIAL AERONAUTICS.

The London Terminal Aerodrome.

ANALYSIS OF FIGURES FOR THE PAST WEEK.

Trips per Day.—Monday, 26; Tuesday, 25; Wednesday, 24; Thursday, 24; Friday, 25; Saturday, 25; Sunday, 13.

IMPERIAL AIRWAYS LTD.:
London—Paris—Zurich; London—Ostende—Brussels—Cologne; London—Rotterdam—Amsterdam—Berlin: Machines 92, passengers 450, freight 9 tons.

AIR UNION:
Paris—London: Machines 40, passengers 183, freight 8 tons.

K.L.M.
Amsterdam—Rotterdam—London: Machines 24, passengers 82, freight 2 1-5 tons.

DEUTSCHER AERO LLOYD:
Berlin—Amsterdam—London: Machines 0, passengers 0.

SPECIAL MACHINES:

DE HAVILLAND AIRCRAFT CO. LTD.:
Machines 1, passengers 1.

ITALIAN ARMY:
Four machines arrived from Brussels.

AIRCRAFT DISPOSAL CO. LTD.:
One machine from Lisbon.

Total number of trips by British machines: 94, carrying 452 passengers. Foreign machines: 68, carrying 265 passengers.

Comparative Figures:

For week ending June 21:
Machines, 162; Passengers, 718; Crews, 206; Total personnel, 918.

Corresponding week, 1924:
Machines, 145; Passengers, 467; Crews, 179; Total personnel, 646.

Corresponding week, 1923:
Machines, 120; Passengers, 441; Crews, 194; Total personnel, 635.

Corresponding week, 1922:
Machines, 135; Passengers, 272; Crews, 193; Total personnel, 465.

Corresponding week, 1921:
Machines, 105; Passengers, 381; Crews, 122; Total personnel, 503.

Corresponding week, 1920:
Machines, 113; Passengers, 217; Crews, 122; Total personnel, 339.

Croydon Notes.

There is so much traffic coming to Imperial Airways Ltd. that the shortage of machines is making itself felt. The Avro Andover is not yet on the service. It has been fitted with a metal airscrew, but vibration is rather marked. Doubtless a little adjustment will cure this.

The D.H. 54 was tested at Stag Lane last week and was thoroughly satisfactory. The fast landing and taking-off qualities of the D.H.34 seem to have been eliminated and the top speed is better than the top speed of a 34. Altogether the D.H.54 seems to be a thoroughly satisfactory aeroplane. It is to be hoped that Martlesham red tape will be cut and that the 54 will not be kept there on test till the passenger-carrying season is dead and gone. It should be possible with proper organisation to get all the tests done in one day so that the machine can be on the service next week.

Anyway, why should not civil machines undergo their tests at Croydon so that their performance can be gauged according to Croydon conditions.

The portion of the Aerodrome at the Northern end which some years ago was fenced off has now been re-included in the Aerodrome and the fence is at present being removed as far as the road. The copses [N.B.—Not corpses.—ED.] at the southern end have now been completely removed though the ground there is still rather rough.

On Wednesday of last week Mr. Perry returned from Lisbon on a D.H.9, where he has been demonstrating. During the week three other D.H.9as have been tested.

The King's Cup Race.

In the list of entries for the King's Cup Race published last week there is one alteration. Mr. Sopwith's entry will be flown by Flt. Lt. P. W. S. Bulman in place of Mr. F. P. Raynham. Mr. Bulman will join the H. G. Hawker Engineering Co. Ltd. as chief test pilot on July 1. The Hawker Company's gain is distinctly the R.A.F.'s loss.

The start of the race both mornings will be about six a.m. Competitors are expected to return to Croydon both evenings between five and seven o'clock.

The Royal Aero Club has decided to admit the Public free to the North-West corner of Croydon Aerodrome.

There will be a special reserved enclosure on the South-West end of the Aerodrome for which a charge of 2s. will be made. Motor-cars will also be charged 2s.

Members and Associates of the Royal Aero Club and the London Aeroplane Club will be admitted free on presentation of their Membership Badges.

The Newcastle Chronicle Ltd. has presented a Cup, value £25, to be awarded to the entrant of the aircraft which makes the fastest handicap time from the beginning of the Race to the Newcastle Control on the second day.

The following donations towards the expenses of the Race have also been made:—The Blackpool Corporation, £50; the Blackpool Tower Company Ltd., £25.

Multi-Engined Aeroplanes.

The following letter has been received:—

Sir,—Referring to the remark in your journal that accidents may occur to multi-engined machines through breakages to engines caused by propellers continuing to revolve owing to the wind I venture to suggest that this risk could easily be avoided by fitting a brake with which the pilot could prevent the engine revolving.

A band brake acting on the crankshaft and operated from the pilot's cockpit should be sufficient and should not weigh very much. In any case, a few pounds more weight is better than a wrecked machine. I believe that such a device has been tried on an S.E.5 at Farnborough when it was required to eliminate all slipstream effect while doing gliding tests.

I think you will agree with me that, the trouble of damaged engine revolving having been overcome, multi-engined aeroplanes will be considerably safer than those with only one engine. I imagine that a bombing pilot 200 or 300 miles behind the enemy's lines would be very much relieved to know that there was no fear of a damaged

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engine wrecking his machine and causing a violent descent in enemy territory. On the other hand, there would be no harm in air-line pilots landing at the nearest aerodrome to investigate any trouble.

(Signed) F. A. Brown.

[In addition there is the question to be considered whether a revolving airscrew sets up more head-resistance than a stationary one. Many years ago an experimenter set a wire upright from the floor to the ceiling of a high room and allowed model airscrews, through the hubs of which the wire passed, to fall down the wire. He found that screws which were allowed to revolve took longer to reach the floor than did screws which were prevented from revolving. Perhaps a locked airscrew on a dead engine may set up less head-resistance than one which is allowed to revolve.—Ed.]

A Correction.

The Air Navigation and Engineering Co. Ltd., of Addlestone, Surrey, state that the big three-engined machine which they are building for the City and Provincial Press Ltd. to carry illuminated signs at night will not be "ready for flying within a month" as was stated recently in this paper. One gathers that good progress is being made with the construction of the machine but manufacture has not advanced to the point indicated.

Mr. Butler's Cruise.

The absence of Mr. Alan Butler from the King's Cup Race this year seems to be explained by the fact that he has recently arrived in Newfoundland where he has extensive interests. Mr. Butler, who qualified for his Master Mariner's Certificate last year, took his yacht from England to Newfoundland in twelve days, which, considering that she is a ketch with an auxiliary motor and therefore must have sailed a considerable part of the journey, is a remarkably good performance. It is all the more so considering that for fifty hours out of the twelve days he made no progress owing to having to lay-to (one believes that is the correct nautical phrase) in a heavy storm. The voyage is an excellent example of Mr. Butler's combined pluck and skill. One hopes to see him back in time for the flying competitions later in the year.

Air Survey.

Major W. J. C. K. Cochran Patrick, D.S.O., M.C., who has just returned from Burma after having carried out the flying and technical supervision of the successful air survey contract there which was secured by Mr. Kemp of the Air Survey Company, has now joined the Aircraft Operating Company Ltd.

He is going to specialise in air survey work for the Company in connection with their contracts, and will start by doing the flying for the Government Ordnance Survey contract which the Company are now executing. Major Cochran Patrick has had unique experience in aerial survey work, and was in charge of the Orinoco expedition which was sent out by the Bermuda and West Atlantic Aviation Company.

A Malmo-Felixstowe Flight.

A good flight from Malmo in Sweden to Felixstowe was made on June 16 by M. Flory, the famous Swedish pilot. The machine was a Swedish Naval S.2 with a Rolls-Royce Eagle IX. M. Flory carried as a passenger Admiral Lindberg, of the Swedish Royal Navy, who is 65 years of age. The start of the flight was made in very squally weather. A stop was made in Holland for refuelling. The Admiral and Capt. Falkman, of the Swedish Legation, were entertained in the evening by Mr. John Lord, of A. V. Roe and Co. Ltd.

The return flight will probably be made next Tuesday.

The Pulitzer and Schneider Competitions.

A highly-esteemed correspondent in the United States writes expressing the hope that British machines will be entered for both the Pulitzer Trophy and the Schneider Trophy Competitions. He points out that as the Pulitzer Trophy Competition will be held during the first week in October and the Schneider Trophy Competition in the last week in October there will be plenty of time to make any repairs, other than a complete reconstruction, necessary to any machine which may be damaged in the Pulitzer Competition before the machine is wanted for the Schneider Competition.

He states that the Curtiss Company are only building three machines for the two races as the interval is sufficient for repairs and reconstruction should they be found necessary.

So far as one can gather, such British machines as may go to the States are only intended for the Schneider Competition. Certainly good would be done to the prestige of British aviation if we could put in an appearance for the Pulitzer Competition and in the event of any repairs being necessary the proprietors of British machines can certainly rely on whole-hearted assistance being given in the workshops of our trans-Atlantic relatives.

K.L.G.'s

From the point of view of all British manufacturers there is considerable satisfaction in learning that other nations appreciate British products, even when made by a rival firm. Most people connected with aviation know that all the air lines operating from England have since their inception used K.L.G. sparking plugs. In addition the majority of foreign air lines use these plugs.

A letter from the Director of the K.L.M., or the Royal Dutch Air Line, reads as follows:—

"Since 1920 our Company has been running air lines to London, Paris, Hamburg, Kopenhagen, etc. It is estimated that the machines have flown more than 2,500,000 km., and for all the machines we only use 'K.L.G.' sparking plugs.

"The 'K.L.M.' is known for safety and regularity of her services; the number of forced landings is very small, and no forced landings were ever due to 'K.L.G.' sparking plugs."

In addition there is satisfaction in recording the fact that the Coppa Baracca, which was presented for competition in memory of the great Italian pilot, Major Baracca, was recently won by a machine the engine of which was fitted with K.L.G. plugs.

So far as one can recollect K.L.G. plugs have been used in the winning engines of every important aviation event since the Armistice in 1918 as well as having been used in the great majority of competing machines.

PERSONAL NOTICES.

Deaths.

BLANCHE.—On June 21, at Peshawar, as the result of a flying accident, No. 240535 Acting Sjt. Henry Eustace Blanche, R.A.F.

BRETHERTON.—On June 21, at Peshawar, as the result of a flying accident, Norris Carden Bretherton, Flg. Off., No. 60 (Bombing) Sqdn., R.A.F.

Mr. Bretherton joined the R.A.F. in January, 1924, and was posted to No. 4 F.T.S., Egypt. Last March he was posted to the Aircraft Depôt, Karachi.

Forthcoming Marriage.

ABELL—MOORE.—A marriage has been arranged, and will shortly take place, between Charles Francis Abell, O.B.E., late R.A.F., and Claire Adele Moore, youngest daughter of the late William Roger and Mrs. Moore, of 9, Westbourne Terrace Road, W.2.

Births.

KNOCKER.—On June 16, at Dorrington, Lincoln, Cynthia Mary, wife of G. M. Knocker, R.A.F.—a daughter.

STATON.—On June 16, at Trianon, South Hill, Felixstowe, to Norah (*née* Workman), wife of Flt. Lt. W. E. Staton, M.C., D.F.C.—a son.

SYMINGTON.—On June 17, at Sussex House, Sutherland Avenue, Maida Vale, to Gladys, wife of Flt. Lt. A. W. Symington—a son.

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